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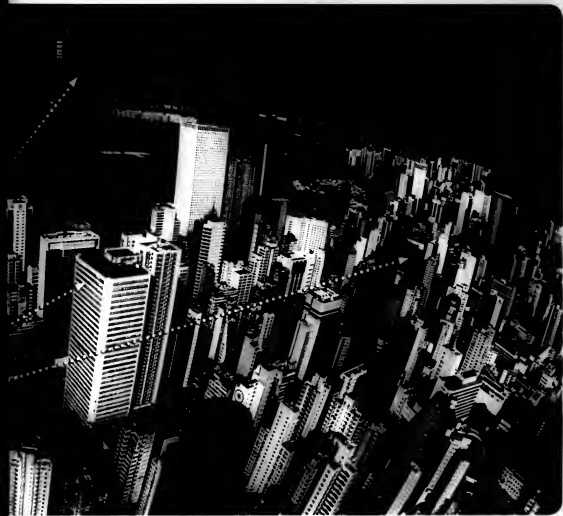
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## COMMON SENSE IN A DATABASE

Artificial intelligence pioneer Doug Lenat (left) has been working for 17 years to codify everything a human knows. Now the public can add to the database. **PAGE 48**



## SECURITY SENTINELS

Three women — Dorothy Denning, Raemarie Schmidt and Martha Stansell-Gamm (left) — have weathered political battles and conquered other problems to help shape IT security policies used throughout the private and public sectors. **PAGE 34**

APRIL 8, 2002

# COMPUTERWORLDTHISWEEK

## NEWS

6

**6 With so few early adopters of .Net, users at Microsoft's TechEd event this week say they still need to be convinced of its usefulness.**

**7 Palm takes the stand** in the Microsoft antitrust case to say that handheld users need interoperability with Windows, too.

**8 Denial-of-service attacks** are an even more serious threat now than two years ago, when they brought down several high-profile Web sites, including Yahoo and eBay.

**10 Oracle extends** its boosting program beyond applications to databases and application servers.

**12 Storage Networking World** provides a forum for storage administrators who say they badly need better management tools.



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## BUSINESS

27

**27 Bart Perkins**, in his first Computerworld column, tells IT leaders why managing their supplier relationships makes good business sense.

**36 Microsoft Certified Systems Engineers** with Windows NT 4.0 credentials are re-evaluating their training and career options in light of recent certification requirement changes imposed by Microsoft.

**38 Enterprise portals** might be useful in helping companies establish links with their employees, customers and business partners, but few companies have taken steps to measure the affect portals have on the bottom line.

**42 Workstyles:** Steve Jarvis, vice president of e-commerce at Alaska Airlines, talks about the IT culture that has emerged in his company to meet competitive challenges in the airline industry.

## TECHNOLOGY

45

**45 Columnist Nicholas Petreley** reviews the history of the Object File Store as an idea and looks to the arrival of the database.

**48 Radio-frequency tagging** can cut costs by automating data acquisition in the supply chain.

**48 A big trucking company** makes its enterprise database management system directly available to Internet users.

**50 Emerging Technologies:** 64-bit computing will power a new generation of applications running on .Net Server and Intel's Itanium.

**52 QuickStudy:** A peer-to-peer network connects two or more PCs to share files and access to devices without a separate server.

**54 Security Manager's Journal:** Did someone steal critical source code? Mathias Thurman gathers evidence of a possible crime. But finding the culprit may not be easy.

## OPINIONS

24

**24 Maryfran Johnson** offers three lessons for corporate IT in dealing with the Web as it matures from adolescence into adulthood.

**24 Pimm Fox** warns about the increasing number of security holes being opened by the proliferation of wireless networks.

**25 David Moschella** is looking for good news in the IT industry amid the spate of recent bad news involving key vendors.

**62 Frank Hayes** says the latest flap over the discovery of two new holes in Office XP only adds to Microsoft's image as a laughingstock when it comes to security. He thinks the company needs code-busters and a SWAT team to find and patch holes quickly.

Editorial/Letters	24,25
How to Contact CW	68
Company Index	80
Shark Tank	82

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## ONLINE

### EARNINGS UPDATES

For the latest about vendor earnings announcements, visit our IT Industry Earnings special coverage page.

[www.computerworld.com/q7a1050](http://www.computerworld.com/q7a1050)

### DESKTOP LINUX?

Linux won't cut it on end users' desktops unless it can run "must-have" Windows applications. Computerworld community member Charles A. Bushing weighs the Windows emulation options — and picks a winner.

[www.computerworld.com/q7a1780](http://www.computerworld.com/q7a1780)

### MICROSOFT IN COURT

With testimony in the antitrust case's remedy hearing now entering its fourth week, be sure to check for the latest updates from court on our Microsoft Legal Issues page.

[www.computerworld.com/insidelegal](http://www.computerworld.com/insidelegal)

### HP/COMPAQ FIGHT CONTINUES

Walter Hewlett is still fighting the planned merger in court, even as Hewlett-Packard and Compaq reveal their management plans for the newly created company. Get the latest on the HP/Compaq deal.

[www.computerworld.com/q7a1850](http://www.computerworld.com/q7a1850)

## AT DEADLINE

### EDS Reorganizes Key Business Units

Electronic Data Systems Corp. announced plans to combine its IT and business-process outsourcing operations into a single unit, effective April 15. The Phoenix, Texas-based company will also create a second new unit that combines its application services and IT implementation consulting businesses. No layoffs are planned as part of the moves, an EDS spokesman said.

### SEC Begins Formal Qwest Investigation

Denver-based Qwest Communications International Inc. told the Securities and Exchange Commission (SEC) has launched a formal investigation into the accounting practices. The SEC, which began an informal inquiry last month, is looking into issues related to Qwest's financial results for 2000 and 2001. The company said it's cooperating fully.

### Microsoft Warns of Holes in Win 2k, NT

Microsoft Corp. issued software patches designed to fix two newly discovered security holes: one that affects Windows NT and Windows 2000, and another that affects Windows 2000 only. The company gave a "moderate" severity rating to each vulnerability. The more serious of the two could let attackers elevate user privileges or run malicious code on unprotected systems, Microsoft said.

### Short Takes

Chicago-based DYWIDAG INC. announced a deal to acquire VMAT CORP., a Boston-based Internet consulting firm that last \$72 million on revenues of \$34.6 million last year. . . . Portsmouth, N.H.-based ENTERTECH NETWORKS INC. warned of losses and said that its CEO, chief operating officer and head of marketing are resigning.

# Microsoft Seeks to Show .Net Is Real

*But many users are just beginning to explore the new development environment*

BY CAROL BILWA

**A** MICROSOFT CORP. executive will try to show IT professionals "how .Net and XML Web services are real today" during this week's TechEd conference in New Orleans, a company spokesman said.

Microsoft plans to showcase corporations and vendor partners that are using its new .Net development environment to build real-world applications and XML-based Web services, according to John Montgomery, a group product manager for the .Net platform.

But .Net, which shipped in February, has hardly become pervasive in corporate production environments yet. Most enterprise users are just starting to explore .Net and Web services technologies, said several analysts, early adopters and even Microsoft vendor partners last week.

#### Gradual Adoption

Mark Driver, an analyst at Stamford, Conn.-based Gartner Inc., said he expects .Net adoption to be gradual over the next five years.

"Most adoption is really going to kick in next year," he said, adding that Microsoft users "have very little choice."

But Driver said he routinely advises his clients to avoid deploying mission-critical applications that rely on .Net for at least six to nine months.

Jon Stotts, a spokesman for Microsoft partner iWay Soft-

ware, a wholly owned subsidiary of Information Builders Inc. in New York that makes components to help integrate business applications, said his firm's enterprise customers are also showing great interest in .Net and Web services. But none of the interested companies is beyond the proof-of-concept stage.

"Our customers are very conservative, so it will probably be a long time before the majority of our customers are implementing these solutions," Stotts predicted, noting that his firm's clients include many Fortune 100 companies. He added that users "are still

trying to figure out exactly how they're going to improve their business processes" by using .Net.

But Driver said some firms may see advantages to using .Net today, particularly if they write Web applications, because Microsoft's ASP.NET is "heads and tails more powerful" than its Active Server Pages predecessors.

The life insurance division of Newport Beach, Calif.-based Pacific Life Insurance Co., for instance, has noted a 20% to 30% performance improvement in Web page delivery since switching to ASP.NET, according to Cameron Cosgrove, the division's CIO.

Cosgrove said that about six of his developers adopted Microsoft's beta tool last year and converted the division's Web

## Beluzzo to Leave Microsoft Amid Reorganization

Rick Beluzzo, Microsoft's president and chief operating officer and a force behind the growth of its .Net and MSN efforts, is leaving the company, the software vendor announced last week.

Beluzzo, 48, will step down as president and COO on May 1 and leave the company in September. The move comes as part of a broader reorganization intended to give greater autonomy to the executives in charge of Microsoft's various product groups, the company said.

Although Microsoft gave no specific reason for the departure, Beluzzo appears to have been the victim of an internal turf war, said Rob Enderle, an analyst at Giga Information Group Inc. in Cambridge, Mass.

"With the scenery on the slide, Beluzzo was charged with making cutbacks at various business units. Enderle said, 'His position, which had been closer to that of president than COO, became more like that of a "glorified administrator" ... and that wasn't acceptable to him.' Enderle said, adding that at one time, Beluzzo was considered a potential successor to CEO Steve Ballmer. "There were Steve and I, and we needed to take the business. I decided it was the right time to pursue my goal of leading my own company," Beluzzo said in the statement accompanying his plans.

Another analyst said Beluzzo's departure will be no great loss.

"I don't think it's a particularly significant blow to Microsoft," said David Scott, a senior analyst at Gartner

Inc. "It's hard to put your finger on anything he's done that was particularly spectacular."

Beluzzo may have helped reverse Microsoft's MSN online services, but the unit is "still not what you'd call tremendously successful," Scott said. Beluzzo also doesn't appear to be closely involved with the development of .Net, a key project for Microsoft that involves introducing its products to allow for the delivery of services and services over the Internet.

"There's a definite culture clash between Rick and the company," Scott said. "He's very self-sufficient. I don't think that gets you very far for Microsoft."

As part of the reorganization, Microsoft will be divided into seven business units: Windows Client, Knowledge Worker, Server and Tools, Business Solutions, CE/Mobile, MSN, and Home and Entertainment. The leaders of each unit will have "comprehensive operational and financial responsibility and greater accountability," Microsoft said.

Beluzzo, a former CEO at Mountain View, Calif.-based Silicon Graphics Inc., joined Microsoft in September 1998 as vice president of its consumer group. As president and COO, he has overseen Microsoft's worldwide sales and marketing, directed its human resources, training and licensing operations, and overseen its efforts in the areas of computer games and TV platform software.

—James Micallef, EDS News Service

Showcase products, applications and Web services built on .Net.

Launch the new and beta versions of .Net Enterprise Servers.

Debut in real time commercially available Web service for consumers.

Reinstruct customers on Web services application architecture.

Provide a road map of future enterprise direction.

## Palm: Handheld Integration Key for Users

Company argues at trial for greater access to Microsoft technical data

BY PATRICK THORDEAU  
WASHINGTON

The battle for the enterprise among handheld vendors is being fought not just in the marketplace, but also in the courtroom of the Microsoft Corp. antitrust trial.

It was there that Michael Mace, a senior Palm Inc. official, last week urged U.S. District Court Judge Colleen Kollar-Kotelly to impose a remedy that would guarantee Palm access to the technical data it needs for interoperability with Microsoft products.

Interoperability is critical, Mace said. "Microsoft has already started to use its position to withhold technical information from Palm, and it has attempted to severely damage Palm's ability to compete with Windows," Mace alleged in his testimony.

The nine states that have refused to sign the Bush administration settlement want a remedy that includes protections for potential PC substitutes, such as handhelds. Those protections are focused on ensuring that competitors can achieve interoperability with Windows.

That's a key issue for some end users. Handhelds have long been used by corporations, initially on an ad hoc basis by executives. But more companies are adopting handhelds as part of broader enterprise strategies, say analysts.

Vince Maribibi, applications manager at Austin, Texas, law firm McGinnis Lochridge & Kilgore LLP, was an early adopter of handhelds, having rolled out Palm OS-based devices to his legal staff more

than a year ago. But next time, he says, he might go the Microsoft route.

The problem, said Maribibi, is out-of-the-box configuration with Windows desktops. "It would take me half the time to set up a [Windows] CE device than it would to set up a Palm device," he said.

That's one of the issues that corporate IT managers face, said Ken Dulaney, a San Jose-based analyst at Gartner Inc. Handhelds go through a proc-

ess of synchronization to automatically merge with data stored on a PC or server, such as messaging and calendaring information in Outlook.

"Microsoft should make the synchronization tool available for more than legal reasons," said Dulaney. "By making it available to Palm, they satisfy more Outlook users. Forcing everyone to use Pocket PC is like forcing everyone to use the same watch."

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"I have not suffered from the fact that we are on Microsoft operating in the office and a Palm OS out in the field," said Brian. Nonetheless, she said she's concerned that the situation could change and supports giving Palm greater access to technical data.

Although Windows gives IT managers a reason to move to CE, one user of IBM's Lotus Notes said the application synchronizes to his company's Palm devices without problems. "If it didn't work well with our mail or calendaring tool, then we would have some serious problems," said Mike Finch, director of application support at City Utilities of Springfield in Missouri. ▀

## DoubleClick Settlement May Affect Corporate IT Policies

New benchmarks for online privacy could emerge

PATRICK THORDEAU  
WASHINGTON

In January 2000, DoubleClick Inc.'s stock was soaring, reaching about \$335 per share. But then came the lawsuits with allegations that the online advertising firm planned to merge information about people's Web-browsing activities with personal identifiers. Six months later, even before the dot-com bubble burst, DoubleClick's share price had tumbled to the mid-\$30s.

DoubleClick put that plunge behind it late last month when it settled the lawsuits. But other firms may face similar problems if DoubleClick's \$1.2 billion settlement is seen as an incentive for more privacy lawsuits.

The settlement may also influence corporate information practices, privacy experts said last week. The terms of the agreement, which include automatic cookie expiration after five years and an independent

audit of DoubleClick's privacy practices, are possible corporate benchmarks. The settlement has "the potential for being a foundation on which other businesses might change their practices," said Brian Smith, an e-commerce privacy expert at the law firm Mayer, Brown & Platt in Washington.

Privacy litigation is a relatively new area, and there have been few law-shaping cases or enforcement actions by the U.S. Federal Trade Commis-

sion. But key decisions are emerging. In January, for instance, the FTC settled a case against Indianapolis-based Eli Lilly and Co. over the company's inadvertent release of customer e-mail addresses. The FTC settlement stipulated specific information security practices for the drug maker.

### Industrywide Impact

These cases "are very influential, very important," said William Paukovitz, chief privacy officer and assistant vice president at Fireman's Fund Insurance Co. in Novato, Calif. Privacy litigation tests the "true meaning" of the law, Paukovitz said, adding, "I try to keep my eye on what's going

on in all of [the cases]."

While DoubleClick's settlement may encourage more litigation, it also illustrates the difficulties inherent in such a privacy action. U.S. District Judge Naomi Reice Buchwald rejected the federal case in New York against DoubleClick, which was also filed in several state courts, in part because U.S. wiretapping and fraud laws cited didn't apply to new technologies, such as cookies.

"Existing laws were not necessarily enacted to deal with the Internet and Internet commerce," said Carlyn Clausen, a privacy expert at Fewell & West LLP in San Francisco.

Denise Garcia, an analyst at Stamford, Conn.-based Gartner Inc., attributes DoubleClick's stock plummet in 2000 to its privacy problems. But she said she sees the settlement, with its requirements for consumer choice and a public information campaign, as having an industrywide impact.

"Most [Web] sites will be inspired or be pressured by their audience to tell them what their privacy policy is. At this point, users really aren't aware of how they are being tracked," she said. ▀

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[www.computerworld.com/p0208](http://www.computerworld.com/p0208)

**Quick Link**

Read more about privacy issues at Computerworld's special focus page  
[www.computerworld.com/p0206](http://www.computerworld.com/p0206)



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DoubleClick put that plunge behind it late last month when it settled the lawsuits. But other firms may face similar problems if DoubleClick's \$18 million settlement is seen as an incentive for more privacy lawsuits.

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Privacy litigation is a relatively new area, and there have been few low-hanging cases or enforcement actions by the U.S. Federal Trade Commis-

### Why It Matters

DoubleClick's pending privacy settlement will get corporate attention as a possible best practice. A court hearing to finalize the settlement is set for next month.

**EFFECT ON IT:** Cookies expire after five years; an independent audit of privacy practices is required.

**EFFECT ON E-COMMERCE:** The settlement requires DoubleClick to conduct a privacy information education campaign. With 300 million advertisement banners, consumer awareness of privacy will increase.

**EFFECT ON POLITICS:** Trade groups want Congress to bar private lawsuits in privacy cases and learn enforcement to state and federal authorities. The DoubleClick settlement will be cited by privacy advocates as a good reason for allowing private action.

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# Denial-of-Service Attacks Still a Threat

Two years after high-profile hits, IT struggles to fend off more sophisticated attackers

BY JAIKUMAR VIJAYAN

**D**ENIAL-OF-SERVICE (DOS) attacks continue to present a significant security threat to corporations two years after a spate of incidents brought down several high-profile websites, including those of Yahoo Inc. and eBay Inc., users and analysts report.

Since then, several technologies have emerged that help users detect and respond to DOS attacks far more quickly and effectively than before. But the increasingly sophisticated attack methods and the growing range of systems targeted in DOS attacks continue to pose a

challenge. "In that sense, the tools are always only trying to catch up" with the threat, said Raj Raghavan, a vice president at SiegelWorks Enterprise Security Solutions, a Pleasanton, Calif.-based integrator of security technologies.

DOS attacks make computer systems inaccessible by flooding servers or networks with useless traffic so that legitimate users can no longer gain access to those resources. To distribute DOS (DDOS) attacks, malicious hackers use hundreds and sometimes even thousands of previously compromised computer systems to launch assaults against a network or server.

During a three-week period in mid-2001, researchers from the University of California, San Diego, detected approximately 12,800 DOS attacks against more than 5,000 targets. Recent examples include attacks against the World Economic Forum's Web site in February as well as those that drove British Internet service provider CloudNine Communications out of business earlier this year.

## Increasing Menace

"The threat is a lot worse today than two years ago," said Harris Miller, president of the Information Technology Association of America (ITAA) in Arlington, Va. "There are lots of indications that since Sept. 11, the number of DOS attacks have greatly increased."

The ITAA is acting as the coordinator of an industry body

## Tips to Help Prevent a DOS Attack

- Regularly review publicly available information on recent security vulnerabilities and incidents. It helps in configuring and updating your public Web server against new forms of attacks.
- Regularly update your DOS detection tools to discover new patterns or events (resulting from new or updated attacks taking advantage of new vulnerabilities).
- Update firewall-filtering mechanisms to deny new attacks.
- Temporarily disable specific services that help be vulnerable.
- Augment your logging procedures.
- Work with your Internet service provider to understand what precautions have been taken to guard against DOS attacks.
- Get a configuration that uses multiple connections built from different network backbones. This will help catch public Web servers to another connection in the event of a DOS attack.

called the IT Information Sharing and Analysis Center, which was created early last year to share information and find ways of dealing with DOS and other security threats.

Part of the problem with DOS attacks is the sheer number of ways in which they can operate, said Pete Lindstrom, an analyst at Framingham, Mass.-based Hurwitz Group Inc. A DOS attack can be launched to overwhelm a target's Web site, CPU, memory, network bandwidth or routers. It can also work by taking advantage of known flaws in products, Lindstrom said.

Degradation-of-service attacks are another variation. Such assaults, which are more difficult to detect than other DOS attacks, involve short-lived bursts of spurious traffic directed at a target from multiple sources and are aimed at slowing network performance.

"It would be a fairly straightforward issue to handle if such attacks originated and terminated with the same network," said Jeff Ogden, director of high-performance networks at Ann Arbor, Mich.-based Internet service provider Merit Network Inc.

The problem arises because almost all DOS attacks involve multiple networks and attack sources, many of which have spoofed IP addresses to make detection even harder, according to Ogden.

So completely choking off the offending traffic requires network administrators to call

upstream service providers, alerting them to the attack and having them shut down the traffic. That process has to be repeated all the way back to every attack source. ▀

## Online Resources

### Distributed Denial of Service Attacks/Tools

<http://infosec.slashdot.org/distributeddenialofservice/>

Links to many resources about DDOS attacks, maintained by the University of Washington in Seattle.

### "Strategies to Protect Against Distributed Denial of Service Attacks"

[www.nsa.gov/ncsc/pubs/7020newflash.html](http://www.nsa.gov/ncsc/pubs/7020newflash.html)

This white paper explains the basics of DDOS attacks and prevention strategies, provided by Cisco Systems Inc.

### Overview of Scans and DDOS Attacks

[www.njpc.gov/idea.pdf](http://www.njpc.gov/idea.pdf)

An executive summary of scans and DDOS attacks from the FBI's National Infrastructure Protection Center. (Download Portable Document Format files.)

### Preventing a DDOS Attack

[www.jmu.edu/computing/info-security/longrange/issues/ddos.shtml](http://www.jmu.edu/computing/info-security/longrange/issues/ddos.shtml)

Guidelines for preventing an attack and links to resources, provided by James Madison University in Harrisonburg, Va.

## Quick Links

For more information about DOS attacks, visit our Security Knowledge Center.

[www.computerworld.com/04/040802](http://www.computerworld.com/04/040802)

## Cost, Other Priorities Stall Use of DOS Detection/Response Tools

Several vendors offer early-detection and response tools for dealing with DOS attacks. The main focus of such technologies is to quickly give IT managers the information needed to filter out malicious traffic while letting in legitimate users.

Just last week, for instance, Waltham, Mass.-based Arbor Networks Inc. launched an enhanced version of its *Proxifier* DOS software that uses network information gathered from a user's Cisco Systems Inc. firewall to identify and filter out bad traffic.

Arbor's *Proxifier* DOS software is just one in a growing list of products available. Other products include the following:

- **DDOS Defender** from Mazu Networks Inc. in Cambridge, Mass.
- **Attack Mitigator** from Top Layer Networks Inc. in Westboro, Mass.
- **Natvisage System** from Aita Networks Inc. in Seattle.

- **CapSIO** from CapSIO Networks Corp. in Woodland, Calif.

Most of these products work

by comparing live network traffic against some previously defined baseline and by alerting users if there is a significant divergence from that baseline. The alerts might be based on a comparison of byte or packet rates, traffic that's directed at specific resources, traffic that originates from specific IP addresses or spans in network traffic.

Despite the early-detection capabilities offered by such technologies, user adoption so far appears to be very slow, said Michael Rasmussen, an analyst at Cambridge, Mass.-based Giga Information Group Inc.

For one thing, the tools aren't cheap. Deploying some of these products can mean shelling out anywhere from \$75,000 to the low end to more than \$1 million for a large enterprise installation. The tools are most effective only when they are installed not just on the edge of corporate networks, but also in service provider networks as well, analysts said.

Many companies also have their hands full dealing with other security, regulatory and privacy issues and may be giving a lower priority to DOS threats, Rasmussen said. "The DOS threat is just one of the security issues that users are worried about," agreed Charles Kolodny, an analyst at Framingham, Mass.-based IDC.

House of Blues Entertainment Inc. in Los Angeles exemplifies that point. Although the company would like to have a DOS tool in place, it has no plans to do so right now because of other priorities, said Steve LaRue, director of network operations. "I'm concerned about DOS, but it is not fiscally viable to roll out anything now," he said.

Many companies have already braved up their firewalls, intrusion-detection systems and load-balancing capabilities against DOS threats and therefore may be reluctant to deploy separate anti-DDOS technology, analysts said.

—Jai Kumar Vijayan

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and 99% soft

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## BRIEFS

## United, IBM Finish Initial DB2 Rollout ...

United Air Lines Inc. said IBM has completed implementing the first phase of a DB2-based data warehouse for the airline. More than 170 of customer and operations data is currently stored in the data warehouse for use in analyzing passenger destination trends. Chicago-based United said data from its call centers, ticket counters and airport kiosks will be added to the future.

## ... And Delta Triples Its Check-in Kiosks

Delta Air Lines Inc. said it plans to install 300 new self-service check-in kiosks at U.S. airports this year, which would more than triple the number it now operates. Atlanta-based Delta said the number of airports where it has kiosks will increase from 30 to 80. The airline will also increase the functionality of the devices so they can be used by passengers with electronic tickets.

## McData Q1 Sales Hit By Order Reductions

Broomfield, Colo.-based storage switch maker McData Corp. said its third-quarter revenue could be as much as 20% below expectations due to order reductions made last month by its largest customer, a reference to EMC Corp. Hopkinton, Mass.-based EMC declined to comment specifically but said its mix of purchases from different suppliers "varies from time to time."

## Short Takes

HEWLETT-PACKARD CO. won a five-year IT outsourcing contract valued at about \$88 million from EUROPEAN AERONAUTIC DEFENSE AND SPACE CO. in Munich, Germany. ... STORAGE TECHNOLOGY CORP. in Louisville, Colo., announced an outsourcing deal with ELECTRONIC DATA SYSTEMS CORP. in Plano, Texas, to run through 2002.

## Oracle Extends Outsourcing To 9i Database, App Server

Users: Companies can offload software administration but need to weigh costs

BY MARC L. SONGINI

ORACLE CORP. has offered software management and hosting services to users of its 9i database for its past three years. Now, it's extending the outsourcing program to its database and application server software.

Oracle last week announced that it's making outsourced management services available for its Oracle9i product line. Users will be able to have Oracle host the software for them, or they can install it in their own data centers or in third-party facilities and get remote support from Oracle.

The outsourcing offer is meant to save money and ease management burdens for users, according to Oracle. The company added that more than 200 customers have already signed up for Oracle9i outsourcing under an early-adoption program that began a year ago for the database and six months ago for the application server.

That's similar to the number of outsourcing deals that Oracle claims to have with users of its E-Business Suite 9i applications. But some users and analysts said there are obstacles to Oracle's strategy to further expand its outsourcing reach.

## Weighing the Options

Potential customers need to do a cost-benefit analysis to determine whether database or application server outsourcing is right for them, said Tom Wyatt, president of the independent Oracle Applications Users Group, which is based in Atlanta. Wyatt works as director of Oracle systems at Sitel Corp., a customer service out-

sourcing firm in Baltimore.

For some companies, especially larger ones, ensuring the security of their databases might outweigh the desire to save money by having a third-party firm such as Oracle handle the software administration work, Wyatt said.

But Paige O'Neill, senior director of outsourcing marketing at Oracle, said the company's data center has been fully audited for security capabilities. Oracle also plans to work with network services firms to provide secure virtual private network connections to other data centers where servers are located, she added.

Application service providers as a whole haven't taken off with large corporate users, said Laurie McCabe, an analyst

at Boston-based Summit Strategies Inc.

To win the trust of potential outsourcing customers, McCabe said, Oracle has to offer compelling pricing and top-notch availability and performance levels on the 9i software, as well as rapid response times when problems occur.

## Winning Converts

William MacLeod is one user who's already sold on database outsourcing. He's the vice president of IT at Telford, Pa.-based Accu-Sort Systems Inc., which has been relying on Oracle for round-the-clock management of its database for the past year.

A maker of industrial barcode scanners, Accu-Sort installed the database at its own facility. But if something goes wrong with the software, a database administrator at Oracle receives the alert and addresses the problem remotely.

## Upgrades, Image Makeover on Tap at Oracle Conference

At its Oracle AppsWorld conference in San Diego this week, Oracle is expected to pitch hotbed users to upgrade to the latest releases of its business applications.

But users and analysts said the software vendor also needs to appear more user-friendly in order to build up its image with customers.

Oracle doesn't plan to make any major product announcements at the conference. Instead, the company will once again try to pitch users on the value of migrating to the Web-based E-Business Suite 9i applications that it released two years ago, said Fred Studer, vice president of E-Business Suite marketing at Oracle.

Early iterations of 9i were plagued with bugs, and users also complained about customer service lapses. Oracle has largely stabilized the software and beefed up its ability to meet demands for

technical support, according to users and analysts. Nevertheless, it may still have to convert some user concerns about upgrades at AppsWorld, they said.

Oracle is also dealing with the lingering fallout from a lengthy feud with the independent Oracle Applications Users Group (OAUG) over the futures of their separate application conferences.

In a survey of 130 OAUG members conducted by the user group and New York-based Morgan Stanley Dean Witter & Co. in December, 52% of the respondents said they didn't think Oracle was a customer-centric company.

"Oracle has to turn around its bad customer public relations regarding 9i and the OAUG," said Joshua Orinbaum, an analyst at Enterprise Applications Consulting in Daly City, Calif. "I expect AppsWorld to be as much of a customer

## AT A GLANCE

## Outside Management

Details about the new Oracle9i software management outsourcing program.

**WHERE THE SOFTWARE RESIDES:** Users have a choice. The software can be installed at Oracle, on their own data centers or at data centers run by other hosting firms.

**HOW IT WORKS:** Pretuned software and server bundles are installed, and Oracle is responsible for monitoring, managing and upgrading the systems.

**WHAT IT COSTS:** Software licenses remain unchanged. The rest of the cost depends on who hosts the software.

The deal has reduced in-house database management headaches, said MacLeod, adding that he's investigating the idea of letting Oracle host and manage Accu-Sort's applications. ■

Involved as Oracle can muster."

Donna Rosenbaum, an OAUG board member, said she won't be attending AppsWorld. But she said that in general, she's looking for Oracle to be more accessible to users and to do a better job of explaining how its new products can help meet their business needs.

To address such concerns, Oracle plans to emphasize customer success stories and highlight its upgrade assistance programs and technical education offerings at AppsWorld, Studer said. About 1,500 users are actively running 9i-based systems, according to Studer. Another 3,000 are implementing the software or upgrading to it, he said. But fewer than half of the application users that make up Oracle's installed base have completed upgrades thus far.

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That's similar to the number of outsourcing deals that Oracle claims to have with users of its E-Business Suite 11i applications. But some users and analysts said there are obstacles to Oracle's strategy to further expand its outsourcing reach.

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Oracle doesn't plan to make any major product announcements at the conference, instead, the company will once again try to pitch users on the value of upgrading to the Web-based E-Business Suite 11i applications that it replaced two years ago, said Fred Shuler, vice president of E-Business Suite marketing at Oracle.

Early iterations of 11i were plagued with bugs, and more also complained about customer service issues. Oracle has largely addressed the software and boosted up its ability to meet demands for

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—Marc L. Sogard

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# Storage Bosses Need Tools to Manage Data

*Interoperability, ease of programming  
most important, conference attendees say*

BY LUCAS MEARIAN  
PALM BEACH, CALIF.

**I**NFORMATION technology executives and storage administrators who say they're dealing with an explosion of data continue to buy cheap disk storage to deal with the overload. Problem is, that approach will force IT managers to hire additional staffers and spend more than they need to manage their organizations' data effectively.

In response to these challenges, IT managers attending Computerworld's Storage Networking World conference here last week said that they're considering using emerging storage resource management tools.

But even those tools have shortcomings, including a lack of adherence with industry standards, as well as interoperability issues and a dearth of security features. Those drawbacks have kept many IT managers from taking the plunge.

"There's an insatiable demand on IT departments to put data online," said Michael Prince, vice president and CIO at Burlington Coat Factory Warehouse Corp. in Burlington, N.J. "We've embraced every bit of storage technology in terms of innovation [that] we could over the past few years... yet the complexity and interoperability issues are huge things."

However, during the next two years, intelligent RAID devices and software will enable IT departments to provide storage as an enterprise-wide utility that can be centrally pooled from many resources, said many practitioners. Storage will be set up under temporary capacity and perfor-

mance parameters for business units, which will then be charged by use, they added.

"Right now, 90% of storage is still direct-attached," said Steve Duplessie, an analyst at The Enterprise Storage Group Inc. in Milford, Mass. "We spent a lot of years spending money on IT like drunken sailors. We can't do that anymore. It's just not reasonable to think we can still scale in the same order of magnitude."

Karl Huff, a vice president at Northern Trust Corp. in Chicago, said his company has been trying to do more with less as its data storage requirements have exploded from 1TB of capacity in 1999 to more than 40TB in a storage-area network (SAN) today. That number is expected to grow to 100TB by early next year.

"At that growth rate, if you

don't have management systems in place, you're going to have trouble," said Huff, whose storage administrators had been keeping track of applications and their use on spreadsheets — something that became far too complicated over time.

"If a switch port goes out, I don't know who to call," said Huff, who is rolling out storage management software from Scotts Valley, Calif.-based InterSAN Inc.

Over the past two years, Northern Trust has been building a SAN that will be remotely mirrored to a secondary data center about 90 miles outside of Chicago by year's end. Currently, that infrastructure has



"THERE'S AN insatiable demand" to store data online, says Michael Prince, Burlington Coat's CIO.

## Bank Centralizing Storage With SAN

Robert Smalley, senior project specialist at the Bank of Montreal in Toronto, said his company is in the middle of converting from direct-attached storage to a SAN to consolidate its more than 300 servers across three data centers.

Smalley estimated the bank will spend about \$20 million over the next five years to build a centrally managed, shared storage infrastructure. So far, the bank has laid out its Fibre Channel infrastructure using a 64-port director-class switch, installed a 125TB tape library and recently hosted up a 10TB IBM Enterprise Storage System RAID box. Still missing from the equation

is vendor support for the entire SAN and a robust set of storage resource management tools, according to Smalley.

"This is an evolution, not a revolution," he said. "We want the doors to listen to the customer. We want interoperability between devices and [software] tools."

However, Smalley said that the benefit of beginning a server consolidation is that it makes more sense than continuing to pay for dead-end direct-attached storage. As he put it, "The risk of doing nothing becomes more risky than doing something."

— Lucas Mearian

to be managed from many different consoles.

The return on investment for purchasing a storage management tool, Huff said, lies in having a Web-based browser that can automatically discover his entire storage infrastructure from one storage administrator's desktop and centrally manage it "without the [IT] help desk getting involved." That can help cut down on help desk and storage support costs, he said.

CIO IT executives said it's simply cheaper to buy more

disk storage than to spend money on software to manage it more efficiently. But Duplessie and others pointed out that the storage price of 4 cents to 10 cents per megabyte doesn't include the management and maintenance of those disk storage systems, which research firms estimate to cost six to 10 times as much as the physical disk. ■

**Quick Link**

For more information on this topic, visit our Storage Knowledge Center  
[www.computerworld.com/k7068](http://www.computerworld.com/k7068)

## CTO: The Not-So-Popular, Misunderstood Title Needs Defining

The title of chief technology officer, though used by nearly 10% of Fortune 500 companies in the U.S., has yet to develop into a clearly defined role, according to one New York executive management search firm.

And if the CTO title ever does gain full acceptance, it will take at least 10 years for that to occur — the same amount of time it took for the CIO title to be embraced. That's the assessment of IT executives polled on the topic at Computerworld's Storage Networking World conference last week.

John Davis, president of New York-based executive search firm John J. Davis & Associates, said the CTO role continues to be defined and its adoption has been slow in part due to the recession.

The issue, Davis says, is whether

the CTO reports "to the CEO, or vice versa? Or are they complementary positions?" is the CTO part of the IT organization, or does the CTO have a super-numerary role that reports directly to the senior management? "We've seen everything," he said.

Mike Prince, CIO at Burlington Coat Factory Warehouse, agreed that there's no clear definition of what a CTO does. Though Prince said he wouldn't hire a CTO



HUFF says Northern's new CTO is a CIO in effect.

now, he might consider creating the position someday, more as a retention incentive to a good manager than as a necessary job.

"It might even be a job for me to

sermonize and help the company move forward with its direction," Prince said.

Karl Huff, a vice president at Northern Trust, said his company's CTO is its first and agreed with Prince that the title has more to do with politics than necessity.

"He's the CIO, basically," Huff said. "But whether a company has the title or not, there are people doing the job."

Most IT executives polled at the conference agreed that the CTO should be the long-term technology visionary at a company, concerned

more with promoting IT projects than with business.

Paul Bonini, CTO at Veritas Software Inc. in San Jose, said the CTO "is not important for things that must be delivered next quarter" but that the position is evolving into an important role in promoting growth through the use of technology to automate.

Garry Todd, CTO at First American Federal Credit Union in Newport News, Va., said many companies that have delayed the CTO's mission mistakenly make it that of technology developer.

"I don't think it's developing as much as directing. I really think it's understanding the business and then directing the technology to it," Todd said. "It's about lowering the relationship with the business side, where it then becomes ownership."

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**Interoperability, ease of programming most important, conference attendees say**

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## BRIEFS

## Dell Details Its Newest Servers ...

Dell Computer Corp. announced several new servers, including its first blade server and a pair of four-processor servers based on Intel Corp.'s Xeon MP chips. Along with the hardware, Dell introduced server management software that supports remote systems deployment and said it's jointly developing Intel-based server interconnect technology with Microsoft Corp.

## ... With Q1 Revenue Better Than Expected

Dell also said it expects to meet its fiscal first-quarter earnings projections on better-than-expected revenue, although business in the quarter ending May 3 likely will still be down slightly from the year-earlier level of \$9 billion. The company said first-quarter revenue should total about \$7.9 billion, compared with earlier estimates that sales might be as low as \$7.7 billion.

## SWIFT Drops Net Deal With Global Crossing

The Belgium-based Society of Worldwide Interbank Financial Telecommunications (SWIFT) ended an exclusive network services deal with Hamilton, Bermuda-based Global Crossing Holdings Ltd., which is in bankruptcy proceedings. SWIFT, a global cooperative that clears money transfers between banks, said it's taking back ownership of its X.25 and IP networks.

## Short Takes

San Jose-based EBAY Inc. said it filed a security hole that could have let attackers change passwords belonging to users of its Web site. ... Brampton, Ontario-based NOKTEL NETWORKS CORP. dropped four patent-infringement claims against San Jose-based OM SYSTEMS CORP. but said it will continue to pursue a \$100 charge.

## Wartime CIOs Alter Security Strategies

Sept. 11 has taught federal IT leaders lessons on the value of security, continuity planning

BY DAN VERTON  
MEMPHIS

INFORMATION technology managers at U.S. federal government agencies are applying the lessons learned from the Sept. 11 attacks to improve planning for continuity of operations during possible major IT disasters in the future.

Speaking here last week at the annual meeting of the Tiverton, R.I.-based National High Performance Computing and Communications Council, a group of five federal CIOs and senior IT executives said IT security and its role in continuity of operations has taken on heightened importance since Sept. 11.

There's an increased emphasis at federal agencies to make operational continuity plans "living documents," said Sandra Bates, commissioner of the Federal Technology Service.

The U.S. Department of Labor, which manages employment and unemployment ben-

efits for millions of Americans, lost two offices and its inspector general in the attacks on the World Trade Center and was forced to put its disaster recovery plan into action without ever having rehearsed it, said Laura Callahan, the agency's CIO.

One of the most important lessons to come out of this experience, she said, is the need to plot a well-conceived communications strategy in advance.

"We couldn't talk to each other," said Callahan, because of cell phone overloading problems and a four-hour "dark" period during which the agency shut down its networks to assess the damage.

Since the terrorist attacks, the agency has also moved to deputize its workers and create what Callahan calls a "neighborhood watch" program, through which they can report anything that doesn't seem right to them.

The Department of the Interior is also working on devel-

oping reporting procedures for managing any future disasters and is focusing on integrating security and business continuity operations into its capital planning process, Callahan said.

"We don't do capital planning with an understanding of the risk," said Daryl White, CIO at the Interior Department. "We do it after the fact. We have to get away from that mentality."

To break away from that approach, network architecture specialists at the agency are now being brought into the thick of the security planning process at the agency, said White.

## In the Works

Lee Holcomb, CIO at NASA, said agencies and private companies "need to architect networks to isolate mission-critical systems."

One such plan that is currently being studied at NASA is the use of security "honeypots," or decoy systems, to divert attackers away from sensitive operational systems, said Holcomb.

Sallie McDonald, assistant commissioner for the Office of Information Assurance and

## Federal Security Programs to Watch

**Program:** Patch Authentication and Dissemination Capability  
**Time frame:** Task order awarded in March to Science Applications International Corp.

**Goal:** To automate dissemination of software patches as soon as they are available.

**Program:** Security Toolkit  
**Time frame:** 2003

**Goal:** To combine various security services into a suite of products available for use by all federal agencies.

**Program:** Data Analysis Capability  
**Time frame:** Pilot 2002; full capability 2003

**Goal:** To develop automated, customized incident handling and analysis of vulnerabilities.

Critical Infrastructure Protection at the General Services Administration, said there are also several security programs in the works that are designed to improve everything from patch management to secure collaboration and vulnerability analysis (see box).

"We're trying to develop a culture of security in federal intelligence agencies," McDonald said. ■

## MORE

For more on how businesses can prepare for potential cyberattacks, see page 30.

## Federal Agency Faces Judicial Ultimatum

Government CIOs are facing a new demand-of-service attack threat, the federal judicial system.

When asked if the Sept. 11 terrorist attacks had a significant impact on how his agency conducts IT security planning, Department of the Interior CIO Daryl White said no. However, an unusual type of denial-of-service attack launched against his agency on Dec. 5 did create havoc, he said.

On that date, U.S. District Judge Royce Lamberth ordered the agency to shut down all of its Internet connections, after hackers from New York-based security firm Predictive

Systems Inc. compromised the Bureau of Indian Affairs' \$40 million trust accounting system.

"Our CIOOP had flaws," said White, referring to the agency's continuity of operations plan. Since then, about 90% of the agency's decisions have been allowed back online after having shown that they don't contain gaps or information related to the trust fund.

But the Interior Department has been nearly crippled by the court order, said White.

The decision amounted to a "judicially directed denial-of-service attack," said White, citing the loss

of the agency's e-mail capabilities and interactive Web presence. "We did not realize that it could be done through the courts. We're still suffering from a dose of reality."

Part of that reality includes being forced to revert back to paper-based processes at a time when the entire federal government is facing an October 2003 congressional mandated deadline to automate business processes.

"Our decision times and cycle times have really suffered," White noted.

As a result of the security audit, the Interior Department is being forced to establish clear policies and procedures to that incident response and recovery "become re-

perable events," he said.

Although critics have accused the agency of not being able to deploy and manage security technologies to prevent problems from occurring, White is now taking steps to improve data management and the agency's secure architecture.

"IT security is a question of accountability," said White. "You can't hold individuals accountable. You can only hold people accountable."

-Dan Verton

## MORE THIS ISSUE

To read about the ongoing problems posed by denial-of-service attacks, see page 18.



## BRIEFS

## Dell Details Its Newest Servers...

Dell Computer Corp., announced several new servers, including its first blade server and a pair of high-end servers based on Intel Corp.'s Xeon MP chips. Along with the hardware, Dell introduced server-management software that supports remote systems deployment and said it's jointly developing Intel-based server information technology with Microsoft Corp.

## ... With Q1 Revenue Better Than Expected

Dell said it expects to meet its first full-quarter revenue projections on better-than-expected revenue, although business in the quarter ending May 31 may still be down slightly from the year-earlier level of \$8 billion. The company said first-quarter revenue should total about \$7.9 billion, compared with prior estimates that sales might be as low as \$7.7 billion.

## SWIFT Drops Net Deal With Global Crossing

The Belgium-based Society of Worldwide Interbank Financial Telecommunications (SWIFT) ended an exclusive network services deal with Hamilton, Bermuda-based Global Crossing Holdings Ltd., which is in bankruptcy proceedings. SWIFT, a global cooperative that clears money transfers between banks, said it's taking back ownership of its X.25 and IP networks.

## Short Takes

San Jose-based EMAT INC. said it filed a security hole that could have let attackers change passwords belonging to users of its Web site. ... Brampton, Ontario-based NORTTEL NETWORKS CORP. dropped four patent-infringement claims against San Jose-based ONE SYSTEMS CORP. but said it will continue to pursue a fifth charge.

# Wartime CIOs Alter Security Strategies

Sept. 11 has taught federal IT leaders lessons on the value of security, continuity planning

BY DAN VERTON  
NEWPORT, R.I.

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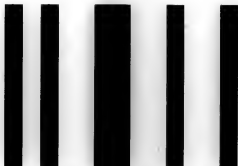
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**Regional Floral Network, January 14**



**Regional Floral Network, February 14**

Continued from page 1

## VAN Spat

"There's always more than one way to skin a cat, and maybe these bigger [VANs] will discover they're not as important as they thought they were," he said. "If this was a power play, it didn't work."

But Ken Vollmer, an analyst at Giga Information Group Inc. in Cambridge, Mass., said ICC may not be able to absorb the extra fees indefinitely. "They can only afford to eat those charges for so long," he said.

Gregory Onjick, data interchange e-commerce administrator at Mack Trucks Inc. in Allentown, Pa., said VAN users need assurances that they won't be subject to these kinds of unexpected changes. He pointed out that telecommunications firms can't randomly disconnect from one another.

Onjick said Mack Trucks has 200 suppliers on Sterling's network and more than 380 on GXS's VAN. Mack used to be a GXS customer, but he said it switched early last year because ICC's prices were 70% lower than the \$20,000-plus monthly fee it paid to GXS.

Now, Onjick said, both GXS and Sterling have offered to meet ICC's price if Mack shifts to their networks. "To me, this is a terrible business practice," he said. "I call it price fixing."

Russell Stultz, president and CEO of Worldwide Publishing

## Looking for Plan B

Devin Johnson, EDI manager at frozen food manufacturer Rhodes International Inc. in Salt Lake City, says about half of his EDI traffic comes through the Sterling Commerce value-added network (VAN). In October, Rhodes switched from Sterling to ICC with the hope of reducing savings in its VAN charges.

Inc. in Plano, Texas, said that he also was contacted by Sterling shortly after it informed customers in January that it would disconnect from ICC.

"The timing seemed to imply that if we didn't switch, we'd no longer be able to trade with Borders and Waldenbooks via EDI," he said.

So when Sterling declined to continue that it would disconnect from New York-based ICC, Johnson began setting up an account with E-Com Systems Inc. in Hamilton, Bermuda, as his backup. "Although we don't expect this to cost a great deal financially, it is savings in a lot of time to take a precaution that shouldn't be necessary," he said.

Frank Kenney, an analyst at Gartner Inc. in Stamford, Conn., warned

that part of the cost of doing business in the VAN world is that continuity of service isn't guaranteed.

"As fat-catch as these [established] companies seem to be, they've invested millions upon millions upon hundreds of millions in their infrastructure," he said. "They're not a public utility."

Kenney added that users need to be aware of the state of the VAN industry. Peregrine Systems Inc. in

San Diego is selling its 40,000-customer e-commerce unit, which could affect its interconnects.

If intra-industry battles are too distracting, Kenney suggested that enterprises portals and private and public e-marketplaces offer an alternative.

"People may say, 'I'm going to start doing this myself,'" he said. "The technology's out there."

—Michael Meenan

A GXS spokesman denied that the company's decision to sever its connection to ICC's network was a case of corporate bullying. He also denied that GXS is engaging in any price fixing, saying that its offers to prospective customers were made unilaterally, based upon our own information."

Sterling declined specific comment but said it has "an active plan to enable customers affected by the termination of its link to ICC's network."

ICC CEO Mike Cassidy acknowledged that the disconnections will prevent the company from meeting its goal of becoming profitable this month.

But he said ICC will survive the spots with Sterling and GXS.

Other new VANs haven't faced the same kinds of problems, Vollmer said. "There's something going on [with ICC] that we don't know," Vollmer said. "I'm sure at some point there'll be lawsuits flying around, and we'll find out." ▀

Continued from page 1

## VOIP

one network that's going to handle both voice and data," said Mark Katsourous, communication automation specialist at the University of Maryland in College Park. "We're talking a major forklift upgrade."

The university has installed VOIP phones made by Baskin Ridge, N.J.-based Axxia Inc. in some of its dormitories and remote locations. But to do a wider rollout, Katsourous said, he would first need to install new routers that could guarantee voice quality and backup power for the voice devices.

"There is no such thing as a quick voice over IP implementation," said Zeut Kerravala, an analyst at The Yankee Group in Boston. He said one of the chief limiting factors is that a wide-area network using a T3 carrier line "is only one-half the speed of a typical LAN," which is the bandwidth VOIP requires.

St. Michael's Hospital in Toronto recently booted broadband from 3M to 40M bit/sec. on its LAN and 20M bit/sec. on its WAN. "I wouldn't have entertained voice over IP on our previous network," said CIO John Wegener.

Like other users, St. Michael's is using a VOIP/private branch exchange (PBX) convergence tool as it transitions to Internet telephony. Wegener stressed the importance of getting VOIP, telecommunications and network vendors on the same page before starting a major project.

"You really need all three of them around the table if you want to get things resolved," he said. "You need to lay out what they're responsible for, what from the start, because it never goes 100% smooth."

More customers will likely be calling those powers in coming years, according to Kerravala. He said that while over-all demand for phone systems likely will be down slightly this year, Yankee Group expects VOIP's share of the market for new installations to rise from 10% in 2001 to 25%.

The city of Houston last month began work on what it says will be the largest VOIP deployment by any government body in the U.S. to date, linking 25,000 phones in a \$15.7-million, 18-month project.

Denny Piper, the city's CIO, admitted that it won't be easy. "We're going to find some holes in our network, but we would have had those anyway," he said. "That you might run

into problems is not justification for not doing it."

Houston's municipal government currently operates 47 PBX phone systems and 43 separate voice-mail systems. It has spent the past five years installing a Cisco Systems Inc. network and will also use Cisco as its VOIP vendor.

But even with a single vendor, there are costly redundancy and quality-of-service issues, Piper said. "We're looking at another \$2.5 million in incremental network upgrades over the next year," he added.

Steve Leadon, president of telecommunications and networking consulting firm Leadon Associates Inc. in Washington, N.Y., said he believes that protracted VOIP implementations will prove a major challenge for IT executives.

"Every IT department I talk to that's doing this, these guys are on total overwhelm," Leadon said. ▀

## Quick Link

Are you looking to better manage your VOIP network?

[www.computerworld.com/2002/7](http://www.computerworld.com/2002/7)

## Network Needs

Users considering VOIP installations should check these items to make sure their networks are ready for the technology:

- Measure and characterize end-to-end delays and packet loss for IP telephony across your network.
- Companies with slower networks or units running near capacity, make sure wiring doesn't surpass the 902-VT protocol for traffic prioritization at Layer 2.
- Your core data network must be able to prioritize packets at Layer 3.
- Outdated WAN use, preferably no more than 85% at peak traffic times.
- Identify your low-speed links (under 256K); these may degrade voice quality.
- Probe for network trouble spots (dropped packets, queue exhaustion, ingress/egress interference, CPU use).
- Determine whether you need to add redundant power supplies to ensure reliability.

## AT A GLANCE

### New Plans For VAN

Some of the changes EDI network operators have made to handle Internet transactions:

- Some VANs use transfer communications standards like the Transfer Protocol and off-the-shelf messaging intermediaries rather than proprietary EDI links.
- Network operators are using HTTP or HTTPS depending on level of security users want.
- Many VANs now provide Web-based transactions of transaction information.
- Some VANs dropped mandatory charges and usage-based pricing in favor of negotiated annual license fees.



Online Gift Retailer, October 24



Online Gift Retailer, December 24

# Satellite Radio Operators Claim Wireless Interference

**Start-ups ask FCC to restrict emissions from Wi-Fi networks, Bluetooth devices**

BY BOB BROWN

**T**WO START-UP satellite radio operators are asking the Federal Communications Commission to sharply limit emissions from wireless LANs, Bluetooth short-range wireless devices and fixed wireless systems that operate in an unlicensed band adjacent to the spectrum they have licensed.

The rival radio ventures—New York-based Sirius Satellite Radio Inc. and Washington-based XM Satellite Radio Inc.—argue that the FCC's rules are designed to prevent

unlicensed systems from interfering with licensed ones. But wireless LAN operators contend that they don't cause undue interference.

The confrontation bubbled out of regulatory obscurity late last month, when FCC Chairman Michael Powell told attendees at the PC Forum 2002 conference in Scottsdale, Ariz., that he wanted to hear their comments on the issue.

In a Jan. 23 filing, Sirius asked the FCC to restrict the power of unlicensed wireless systems operating in the 2.4-GHz band. Sirius said in its petition that

out-of-band emissions from devices such as 802.11b Wi-Fi wireless LANs "seriously threatened" deployment of the fee-based radio systems that it and XM have spent a total of \$3 billion to develop.

The alleged interference problems with the 2.3-GHz band used by the radio operators could be resolved by installing filtering technology on Wi-Fi

and Bluetooth devices, Sirius claimed. An XM spokesman agreed, saying that filters could be added by wireless device makers at "a modest cost."

But Guy Hamblin, a manager in the wireless telecommunications group at United Parcel Service Inc. in Atlanta, characterized the Sirius peti-

tion as a case of "asking for the moon and negotiating down from there." UPS is in the process of deploying some of the world's largest wireless LAN and Bluetooth networks.

Hamblin said any potential interference between Wi-Fi devices and satellite radios is close to immeasurable. "At a distance of anything more than 100 feet, the interference is infinitesimal," he said. But Bluetooth systems that link cordless headsets and cell phones in cars that are equipped with satellite radios may be a bigger concern, Hamblin said.

If approved, the Sirius petition would "severely hinder" users of the unlicensed spectrum, said Andrew Kreig, president of the Wireless Communications Association Interna-

tional, a Washington-based trade group that represents fixed wireless companies. He predicted a "battle royal" over the issue before the FCC.

Michael Murphy, director of support services at the Carlson Hospitality division of Minneapolis-based Carlson Companies Inc., said the spectrum battle is low on his list of wireless LAN priorities. "I have a lot of other things I need to focus on, like security and encryption," Murphy said, noting that the turf won't affect ongoing wireless projects at Carlson. ■

## Satellite Radio Irks Broadband Companies

While satellite radio operators are complaining about Wi-Fi and Bluetooth systems, several wireless broadband service providers last month filed claims with the FCC charging that their networks are being interfered with by the radio systems, particularly those run by XM Satellite Radio.

The broadband suppliers said the FCC had removed important spectrum operated by the satellite radio companies will cause "degrading" interference to their own operations within the 2.3-GHz band. The claims were filed by WorldCom Inc., BellSouth Corp., Earthlink Networks Inc. and the Wireless Communications Association International trade group.

XM Satellite operates about 900 terrestrial repeaters, while Sirius Satellite Radio currently has about 100 of the devices, which are designed to fill coverage gaps in their services within U.S. cities. The FCC has allowed the repeaters to be used on a temporary basis.

An XM spokesman said the company could resolve any interference problems with wireless broadband systems by adopting filtering technology, much as it has suggested wireless LAN manufacturers do to prevent their systems from interfering with satellite radio receivers.

—Bob Brown

## Campbell Looks to Link Applications on Intranet

**New portal eyed as single source of data for end users**

BY JENNIFER DUBARTINO

Campbell Soup Co. has a multitude of intranet sites from which its sales force and other employees can get information, but many of them are never used. Joe Brand is trying to change that.

Brand, director of enterprise architecture at the Camden, N.J.-based food company, is overseeing the creation of a Web-based corporate portal that's designed to eventually serve as a single source of data for employees at Campbell's operations around the world and some of its business partners.

The portal is being run in pi-

lot mode now and is scheduled to go live May 18. Brand said the initial version will feature typical portal fodder: human resources applications.

But Brand added that the portal, which is based on IBM software and is being developed through an IT services contract with IBM, has an infrastructure that should let Campbell rapidly bring its other applications and databases online.

### Increased Productivity

The next applications to be tied to the portal will be sales force automation tools. Campbell also plans to add business processes, such as its online procurement activities.

Brand wouldn't disclose the cost of the project. But he said company officials expect the portal to increase productivity

## Portal Services

**Details about IBM's new corporate portal offering:**

### KEY TECHNOLOGIES

- WebSphere portal and application server software
- Lotus Domino, Sametime and QuickPlace applications
- Tivoli security management tools
- DB2 Universal Database

### TARGETED USERS

- Consolidation of multiple intranets into a single portal
- Employee and customer self-service applications
- Online collaboration and increased mobile support
- Web-based corporate training

by reducing the amount of time employees spend searching for information.

The portal includes e-mail, conferencing, instant messaging and collaboration tools developed by IBM's Lotus Soft-

ware Group, plus other IBM technologies. IBM announced late last month that Campbell was the first customer of a new Dynamic Workplaces IT services offering that utilizes the various products (see chart).

Campbell was already using Lotus Notes, but Brand said that wasn't the key to its decision to go with IBM on the portal project. He said the big selling point was IBM's plan to add support for Java 2 Enterprise Edition in new versions of Lotus' products, a strategy that was announced in January.

"We wanted a development platform that adhered to industry standards," Brand said.

Portals such as the one at Campbell have to be able to securely manage end-user identities within a directory, said Michele Rubenstein, a security consultant and a director of the messaging forum at The Open Group in Menlo Park, Calif. "You have to define permissions and rules," she said. ■

Reporter Todd R. Weiss contributed to this report.



Internet Tax Prep Service, September 14



Internet Tax Prep Service, April 14

**HP Blade servers are here.  
The most flexible way to  
manage your infrastructure.**

Radical simplicity. Extraordinary flexibility. HP Blade servers are about to forever change the way you look at, manage and, yes, even maneuver through your data center.

They are complete, ultra-dense servers on single modular cards—including processor, memory and all network connections—that come with a choice of Linux, Windows® or HP-UX.

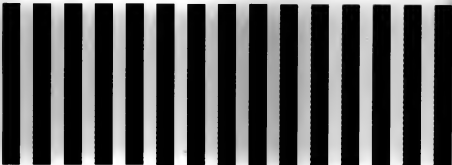
**Easier to manage and maintain.**

This elegant, standards-based design allows you to easily combine server, storage, networking, appliance and management blades in the same 38-slot chassis, then reconfigure on the fly to handle expanding or contracting workloads.

Each blade connects to the network infrastructure already embedded in the chassis, dramatically cutting the number of cables needed. With far fewer cables to fuss with, they're far easier to manage and maintain than conventional servers. Even management is shared. Which means all 38 blades can be viewed and monitored as a single system.


**More efficient and reliable.**

Since all blades in the chassis share the same power and cooling source, they're also more energy and space efficient. In fact, you'll find HP Blade servers



server blades

storage blades



place them in these slots,  
as needed.



reduce the typical number of fans and power supplies required by as much as 60%.

The reliability advantages of moving to blades are profound. To give you some perspective, imagine building a server cluster solution that is comparable to a fully loaded HP Blade server cabinet. The projected annual failure rate of the HP Blade server solution is about 41% lower than that of the comparable server cluster.

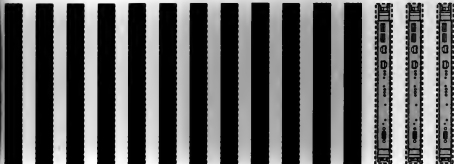
In the unlikely event that a blade should fail, the problem is isolated in the same way that multiple systems connected by I/O are isolated from each other.

#### Is your server as sharp as a blade?

Servicing a blade is as easy as deploying one. Each blade is freely accessible from both the front and rear of the cabinet and can thus be replaced at a moment's notice. Each slot can be powered on or off separately. Hot-swap and hot-plug technology is implemented throughout, allowing for the seamless addition or replacement of blades while the rest of your infrastructure continues to hum.

We invite you to read our technical white paper on HP Blade servers. Or, better yet, talk directly with one of our infrastructure specialists to find out more about how HP Blade servers can change the face of your business. Give us a call at 1.800.HPASKME, extension 246. Or visit [www.hp.com/go/infrastructure](http://www.hp.com/go/infrastructure).

Infrastructure: it starts with you.



network blades

management blades

## BRIEFS

## HP Names Execs to Postmerger Roles

Hewlett-Packard Co. named 150 executives to handle similar management jobs if its proposed acquisition of Compaq Computer Corp. occurs. HP, which is awaiting formal approval of the deal by its shareholders following a vote last month, said the appointments would include business and sales executives from its operations and those of Compaq.

## WorldCom Cuts Jobs At Corporate Unit

WorldCom Inc. said it's laying off 6% of the workers at its WorldCom Group unit, which offers data, Internet and video communication services to corporate users. The \$700-million unit is being down to better align costs with a reduced revenue outlook that was announced in February, WorldCom said. The layoffs reduce the company's total workforce by 4%.

## Microsoft Asks Judge To Reconsider Ruling

Microsoft Corp. asked a U.S. District Court judge in Seattle to reconsider a March 15 ruling that allows Sun Microsystems Inc. to continue selling its Linux operating system. Microsoft, which is suing Linux.com for allegedly infringing on its copyrights, said the judge asked the wrong questions while considering its injunction request.

## Short Takes

AT&T CORP. and London-based BRITISH TELECOMMUNICATIONS PLC completed the dissolution of their CONCERT COMMUNICATIONS CO. Joint venture and took back individual control of its assets. ... In a stock-swap deal, New York-based security consulting firm KROLL INC. agreed to buy OBT-TRACK DATA INTERNATIONAL INC., an Eden Prairie, Minn.-based maker of data recovery software.

## Low IT Budgets Hurting Many Software Vendors

Parade of companies says first-quarter results will be below expectations

BY TODD R. WEISS

**T**HE RECESSION may be showing signs of ending in the U.S., but the economic recovery isn't coming fast enough for many software vendors. Nearly a dozen firms last week warned that their first-quarter financial results will be lower than expected due to continued limits on IT spending.

Vendors such as Pleasanton, Calif.-based PeopleSoft Inc.; Dallas-based IT Technologies Inc.; Redwood City, Calif.-based BroadVision Inc.; and Commerce One Inc., also in Pleasanton, all said they had sales shortfalls during the quarter ended March 31. Many corporate users remain cautious about investing in new software, the vendors said.

For example, Commerce One disclosed that it sold only about \$8 million worth of its business-to-business applications in the quarter. San Mateo, Calif.-based EpiPhany Inc. said a user that late last year signed the largest contract in the customer relationship management (CRM) software vendor's history notified it during the first quarter that the project was being rethought.

Albert Pang, an analyst at IDC, a Framingham, Mass.-based research firm, said new applications—even those that offer potential business paybacks to users—have become a much harder sell because of the tight IT budgets at many companies.

"We've seen a fundamental shift among the customers," Pang said. "They want to see quicker benefits and faster implementations and lower cost of ownership."

According to a survey of

approximately 900 companies worldwide that was released last month by Forrester Research Inc. in Cambridge, Mass., a majority of the respondents said they have no interest in buying either CRM or supply chain management software this year (see chart).

## Hard Times to Continue

"We think the economy is a major factor here," said Forrester analyst Laurie Orlov. Many companies are restricting their IT spending and focusing on infrastructure technologies such as networking

equipment and information security tools, she said. As a result, Orlov added, Forrester expects hard times to continue for application vendors at least through the end of this year.

"I think everybody's getting killed out there," said John Chen, chairman, CEO and president of Dublin, Calif.-based Sybase Inc. "It's a really tough environment."

Sybase, a vendor of databases, mobile software and integration tools, said it expects to meet the pro forma earnings projection it made during the first quarter. But the company met those earnings because of cost-cutting, not strong sales, Chen said.

First-quarter revenue will likely total about \$210 million,

## No Thanks

Are you interested in buying CRM or supply chain software this year?

CRM

35%

53%

12%

SUPPLY CHAIN

22%

61%

17%

POTENTIALLY INTERESTED

NOT INTERESTED

NO ANSWER

Base: All companies worldwide

Sybase said. That would be 8% less than the consensus estimate of \$228 million from Wall Street analysts who were surveyed by Boston-based First Call/Thomson Financial. ▶

## Compuware Moves to Cut Back Services Operations

Revenue drop forces layoffs, site closings

BY TODD R. WEISS

**S**TRUGGLING by a continuing drop-off in revenue, mainframe: software and services vendor Compuware Corp. last week announced that it's laying off an undisclosed number of workers and closing some of its IT services offices as part of a plan to shed unprofitable operations.

Like many other vendors (see story above), Compuware warned that business in the quarter ended March 31 was below expectations. The Farmington Hills, Mich.-based company said it expects to report fourth-quarter revenue of approximately \$400 million, more than 20% below the year-earlier level of \$514.5 million.

Software license sales and professional services revenue both fell sharply on a year-to-year basis. But Compuware said the layoffs and office closings will primarily affect IT services workers and employees who support those workers.

Compuware has about 12,000 workers and 110 offices worldwide. The company said it

won't divulge the number of employees it will lay off or identify the offices due to be scaled back or closed until the affected workers have been notified. The cutbacks are expected to be completed within about two weeks in North America but will take longer in Europe because of the labor laws there.

Peter Karmanos Jr., Compuware's chairman and CEO, said in a statement that the company will honor all IT services contracts to which employees have been assigned. Workers in offices that are being closed will be given incentives to stay until they finish projects for users, he said.

David Floyer, an analyst at TFCentrix Inc. in Mountain View, Calif., said many users don't need as much mainframe-related services help as they used to. He added that Compuware previously grew its revenue by snapping up smaller software vendors, a strategy that doesn't work now. "The way they grew in the past was through acquisitions, and there's nothing to acquire anymore," Floyer said. ▶

## Damage Control

Key details about Compuware's planned cutbacks:

**WHY IT'S HAPPENING:** Compuware said that some of its IT services operations haven't been profitable, and the situation isn't expected to change in the near future.

**HOW IT WILL AFFECT EMPLOYEES:** That's unclear. Compuware won't say how many workers will be laid off or identify the offices that will be downsized or closed.



## Word on the Street: Migrate to Linux.

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**COMPAQ**



MARYFRAN JOHNSON

# Web Adolescence

**A**S ANY PARENT who has survived it will tell you, adolescence is a balancing act between tantalizing potential and nerve-racking risk. So it's a mixed blessing that the Web is now arriving at its own riveting version of this stage.

On the potential side, there persists a profound belief that the Web holds the power to change the future of business. On the risk side, however, there will inevitably be awkward growth spurts and spectacular screw-ups. So what are some of the lessons corporate IT and business can learn as the immature Web finds its way to adulthood? Here are three to consider:

**Lesson No. 1: Practice discretion. (Revealing too much means regretting it later.)**

Our cover story last week, "Guarding the Online Gates," begins with a compelling anecdote about the chief of security from now-bankrupt Exodus Communications arriving at a meeting with 700 pages of competitive intelligence on Cable & Wireless, which was acquiring Exodus assets. Surprise!

Unbeknownst to many organizations, their own Web sites have evolved into gold mines for competitors. Companies are posting everything from floor plans and manufacturing processes to details about network infrastructure and employee travel schedules. Even if online discretion isn't a problem for your firm, it may be for one of your partners or suppliers.

Experts advise that before company content goes up online, a review team from the legal, human resources, marketing, IT and business units should approve it. (Well, that should ensure you'll never post anything again.)

**Lesson No. 2: Resistant to bottom-line realities. (There really is no free lunch.)**

There was a flurry of stories last



A warning message is shown to chief of Exodus Communications. You can contact him at [maryfran.johnson@computerworld.com](mailto:maryfran.johnson@computerworld.com).

week about the impending demise of free e-mail services, as both Yahoo and Microsoft launched premium paid services for e-mail forwarding or additional storage space that would cost avoid users \$20 to \$30 a year. Portal player Terra Lycos is also toying with paid e-mail services.

Of course, as any publisher knows, e-mail was

never free in the first place. It was advertiser-supported in the hope that millions of eyeballs would mean millions of transactions. Wrong. Advertisers are now curled up in fetal positions, waiting for the economy to improve. Analysts say it will take years for fee-based e-mail to catch on because of consumer resistance to paying for a "free service." Wrong again. People will pay for what they value — although it certainly won't

be six different e-mail addresses.

**Lesson No. 3: Avoid magical thinking. (Bad things don't disappear when you ignore them.)**

Many businesses seem determined to overlook unpleasant realities, such as the burgeoning threat of viruses, worms and Trojan horses. As we reported in our Future Watch feature last week ("Malware's Destructive Appetite Grows"), the problem is escalating. In 1998, there were 262 known vulnerabilities in all operating systems and 40,000 known viruses. Today, there are 10 times the operating system vulnerabilities and 59,000 viruses, according to the CERT Coordination Center and TruSecure Corp. They're multiplying faster, propagating more efficiently and attacking networks much more effectively.

The next frontier for rogue software will get even more personal: invading our cell phones and PDAs. Security experts are predicting a major outage of at least one nationwide service within the next five years, and it probably won't take that long.

One comforting thought is that adolescence mercifully passes. The Web will mature, and we will look back on these difficult years and say, "That wasn't so bad, was it?"

PIMM FOX

# No Wires, No Security, No Solution

**S**PRING IS IN THE AIR, and so is your vital network data. The explosion of wireless networks — at home and in the office — using 802.11 standards has been a boon to laptop makers and users who dislike being tethered to LANs.

A trip to an airport, conference room or cafeteria confirms that wireless LANs are a common feature of the IT landscape. The trouble is, hackers are making the same trip. Dubbed "war drives," they travel in cars

armed with a laptop, antenna, free downloadable software and a little bit of knowledge, aiming to discover wireless access points.

Chris O'Rerell, CTO at Herndon, Va.-based Netsec, recently took a drive around Capitol Hill in Washington and located more than 100 access points, including many from the government. Luckily for those IT administrators, O'Rerell is a security expert whose company this summer is coming out with a device to detect wireless network intrusions.

But one device isn't the complete answer to the Herculean task of securing wireless access points. You need strict policies for wireless security.

No more wireless touch-potato networks with the company's laptop. A sweep of a bedroom community in the evening reveals how easy it is to get the Service Set Identification (SSID), which, when inserted into the wireless network card configuration, permits network log-ins. Better to turn off SSID broadcasting.

Most Dynamic Host Configuration Protocol (DHCP) servers automatically assign IP addresses for a network —



With IP is Computer world's Web Coast bureau chief. Contact him at [pimm.fox@computerworld.com](mailto:pimm.fox@computerworld.com).



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so consider disabling DHCP and go with static IP addresses. At the very least, according to O'Farrell, you can then prove malicious intent, because a hacker would have had to manually configure an IP address to enter the network. Static IP addresses are a pain, but they're more secure.

Do regular intrusion sweeps of your wireless network in case if you can hack your own network. And do them at lunch, when the executive conference rooms are used or when workers are outside with their machines. The signal strength of wireless networks varies from 300 to 2,000 ft., so don't assume someone in the parking lot is too far away to slip inside your network.

**Enable Wired Equivalent Privacy**, but recognize that it isn't activated by default — you have to configure the client and the access point to make it operational.

**Use Media Access Control-layer filtering**, but don't rely on it, because MAC addresses are in the open when transmitted and can be spoofed.

Don't put the access point on an internal network, and make sure your virtual private network gateway is inside the firewall.

Finally, design a security plan before implementing a wireless network; otherwise, this spring could easily turn into a winter of discontent. ■

DAVID MOSCHELLA

## IT Industry Takes It On The Chin

THESE DAYS, I'm almost afraid to open the newspaper. Has there ever been a more embarrassing time to be in the IT business? It's had more than budgets are tight and technology stocks are in the dumps, but consider what's happening with some of the biggest — and theoretically most respected — companies in the industry.

I even now that the HP/Compaq voice has been taken, the story just won't go away. The counts and recounts may take longer than the presidential election in Florida, and now Walter Hewlett is taking the whole thing to court, essentially accusing HP of buying votes. Has there ever been such sustained and personal mudslinging within such a

once-admired company? And it's hard to avoid wondering if the antismog forces would have been quite so fierce were the CEO of another gender. Then again, I also think the merger is a terrible idea.

2. Can you think of a more absurd suit than America Online using its Netscape Division to sue Microsoft? AOL decided to buy Netscape in November 1998, and since then has done absolutely nothing to promote the Navigator browser.

If AOL had simply converted its own base from Explorer to Navigator, browser competition today would be alive and well. A trial would almost be worth it, just as AOL would have to explain this in public.

3. Sun's suit against Microsoft isn't a whole lot better. Even a clever talker like Scott McNeely can't find it easy to explain how: Java is the clear global standard and will soon be in your toasts.



DAVID MOSCHELLA  
is an author and  
independent consultant.  
Contact him at  
moschella@earthlink.net

er, and b) Microsoft should pay Sun for the irrevocable harm it has inflicted upon Java. If anything, Microsoft's dominant position and high-handed tactics are among the main reasons the rest of the industry accepted Java in the first place.

Oh well, at least Scott is entertaining, with seemingly a good line for every occasion.

4. Of course, Microsoft is hardly a figure of sympathy. The company remains overinvested and seems as determined as ever to wield its power. In recent days, Red Hat, Palm, Gateway, Novell and others have all come forward and complained that Microsoft continues to abuse its monopoly position.

And although these companies clearly have their own axes to grind, it's telling that Microsoft can't put forward anyone to say that its practices have changed in keeping with the spirit

of the proposed Justice Department settlement.

5. Things only get worse in the dot-com and telecommunications worlds. Fortunately, most people incorrectly see Enron as a Texas energy company, not the nice-signature business-to-business exchange. But is there any doubt that the alleged Global Crossing/Quest "T'll pay you; you pay me" revenue shell game was rampant through many parts of the dot-com industry? You know there will be more of this to come.

6. Then there are the daily thorns of executive privilege and greed. WorldCom gives Bernie Ebbers a nice little \$340 million loan. Failed executives walk away with millions, while their employees get shown the door; the big bonuses keep flowing, even as companies don't perform.

Perhaps most scarily, stock options, the golden goose of the IT industry, are now under sustained attack, to who knows what end.

Let me know if you hear any good news. I'm sure we could all use it. ■

## READERS' LETTERS

### Blame the Customer

I FOUND the thoughts of CA Presidents and CEO Sanjay Kumar enlightening ("CA Confronts User Anger, Reveals Web Portal Plan," Page One, March 4). I learned that the cause of combative customer relationships is acquisitions and subsequent restructuring. I was relieved to find that it's still the customer's fault and not a problem with CA's corporate culture, policies, attitudes and procedures. **Bob Randolph**  
President  
Alpha Professional Services Inc.  
Phelps, N.Y.

### Behind Spaghetti Code

I ENJOYED the article "Mainframe Fights, Pay at The Premium" (Page One, March 4). However, it's almost impossible to get a true Cobol mainframe user job because companies are trying to cut corners and hire only those who can also write in other languages. But these programmers love

to use negative "if" statements, causing shreds and giving us spaghetti code like we had in the 1970s when assembler programmers learned Cobol. I have tried to learn C, Unix and Visual Basic, but my expertise always puts me on a Cobol job, so I lack experience in them.

**William M. Vasequez**  
Senior programmer/analyst  
Juliet, Ill.  
bvaseq@state.com

### A QA Lesson From Enron

ONE MAJOR LESSON emerging from the Enron debacle is the need to avoid having the same firm carry out consulting and auditing activities ("Enron Lesson: Tech Is for Support," Page One, Feb. 18). A closely related point for the IT community is to avoid having your software vendor (and its implementation partner) carry out the primary quality assurance reviews of IT implementation projects. It is realistic to expect a QA reviewer

provided by the software vendor to fault the vendor on inadequate configuration management or poorly executed software testing? Will a reviewer from a vendor's implementation partner risk a \$15 million consulting contract by pointing out in a \$40,000 QA report that the project is behind schedule or that scope creep is threatening to drive up the project cost?

**M. Glenn Newkirk**  
President, InfoSecurity Services Inc.  
Raleigh, N.C.  
glen\_newkirk@infosecurity.com

### Suspect Privacy Policies

IN THE MARCH 4 article "Corporate Privacy Credibility Crumbles" (News), you say Procter & Gamble is trying to reinforce consumer confidence "by implementing a plain-language privacy policy [and] privacy seal certification." So what? Have people forgotten that eToys had a plain-language privacy policy that was certified by Truste? As soon as eToys hit a rough spot, it started

hawking its customer lists and customers' personal information to prospective buyers. Only a public outcry stopped it from doing this. A privacy seal may certify what a company's privacy policy is now, but these policies are subject to change.

Once your information is in their hands, if they change their minds about sharing it, there's not much you can do about it. This means that privacy policies and certification seals are worthless. **Daniel P.B. Smith**  
Norwood, Mass.

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Janine Eddle, letters editor, Computerworld, PO Box 917, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax (508) 879-4843. Internet: letters@compuserver.com. Include an address and phone number for immediate verification.

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# BUSINESS

BART PERKINS

## After the Purchase

**I**F YOU WANT your IT organization to be successful, you must be effective at managing your suppliers. Research conducted by my firm indicates that a typical Fortune 500 company spends more than 60% of its IT budget on external suppliers such as vendors and consultants.

An IT executive at an airline recently said 60% was far too high. He estimated that no more than 35% to 40% of his budget went outside the company. But he later realized that he hadn't included the costs of his company's airline reservation system, frequent flyer program and yield management system, all of which were joint ventures. His revised estimate: 80% to 85% of all IT spending goes to external suppliers.

Don't find that alarming. Current trends indicate that even more IT dollars will be directed to external spending in the future.

Outsourcing of IT infrastructure is increasing. Few IT departments have the capacity to develop and manage complex infrastructures, including server centers, networks and desktops. An outsourcer that specializes in providing infrastructure can usually offer better levels of service for less money.

Off-the-shelf packages continue to replace custom applications. The quality of available packages has increased so dramatically that it's rarely cost-effective to develop homegrown applications unless they truly provide a competitive advantage.

CIOs look favorably on hiring vendors to handle thankless jobs. Infrastructure management, for example, is what I call a tie-loose job; few CEOs stop by to say, "Great job keeping the servers up."

Corporations realize that their competitive advantages stem from their core competencies, so business process outsourcing of noncore competencies is becoming more prevalent. Accounts payable, for example, rarely provides competitive advantage, so it's often prudent to outsource all of it.

IT can also make its external spending more effective by addressing the following key supplier management issues:

Create target cost reductions. Consolidate your supplier portfolio, standardize your buying processes and improve your contract negotiation tactics to reduce spending on significant portions of the budget.

Align buying decisions with your IT architecture. Many buying decisions today are dri-

ven by individual project needs without considering implications to architecture. In the case of one of my clients, buying against the architecture would have prevented the unnecessary complexity — and costs — of having eight database management systems, six e-mail systems and 15 desktop hardware platforms.

Develop an exit strategy for every critical supplier. When a contract comes up for renewal, have a plan for changing suppliers and minimizing the associated switching costs. A company without a Plan B is often held hostage by ruthless suppliers during contract renegotiations. In difficult economic times, it's also prudent to have a contingency plan for disasters: If your supplier goes bankrupt, you must be able to recover as quickly and seamlessly as possible.

Understand the total cost of outsourcing. If you outsource, you must continuously manage the supplier. That promotes understanding and allows small problems to be resolved before they grow. This takes time, money and a staff with the right skills, so don't cut costs there. Invest in developing project and program management skills among your staff.

Invest in win-win relationships with critical suppliers.

Win-win is the only way to sustain a buyer-seller relationship. If you squeeze your suppliers so much

that they can't make a profit (or worse, go out of business) you have created a lose-lose situation. Being forced to replace a supplier unexpectedly can cause more headaches and expenses than dealing effectively with the one you have.

In a sluggish economy, it's important for IT to show fiscal discipline and provide a good return on all its spending. Effective supplier management is one of the best ways to leverage your spending and boost the success of your IT organization. ■



Bart Perkins is managing partner at Lawrence Perkins Inc., in Louisville, Ky., which helps CIOs manage their IT suppliers. He's the former CIO at Tricon Global Restaurants Inc. and at Dale Food Co. Contact him at Bart@Perkins.com.

## THIS WEEK

### SECURITY SENTINELS



A handful of women, including Georgetown University professor Dorothy Denning (left), have overcome professional and

obstacles to help set IT security policies used by the public and private sectors. **PAGE 34**

### CERTIFICATION STYMIE

Microsoft's changing requirements are leading some IT workers to question the value of their Windows NT 4.0 certificates and reconsider their options. **PAGE 36**

### PORTAL PICKLE

Although an increasing number of companies are tapping enterprise portals to improve information sharing with employees, customers and business partners, only a handful of organizations are tracking the returns that these gateways can provide. **PAGE 38**

### GUIDING GREENHORNS

There are simple steps that experienced supervisors can take to prevent rookie managers from stumbling out of the gates, says management consultant Carol A. Walker, who wrote an article about the subject in this month's *Harvard Business Review*. **PAGE 40**

### CAREER ADVISER

Fran Quintel counsels an unemployed network support technician and a Unix programmer who hopes to break into bioinformatics. **PAGE 42**

**EDITOR'S NOTE:** Perkins, a former CIO who now helps his consulting peers manage IT vendors and suppliers, will write in this space on the second week of every month. His column replaces the April's "Thinking the Unthinkable."

### **Introducing Fujitsu Consulting—a partner who shares your vision**

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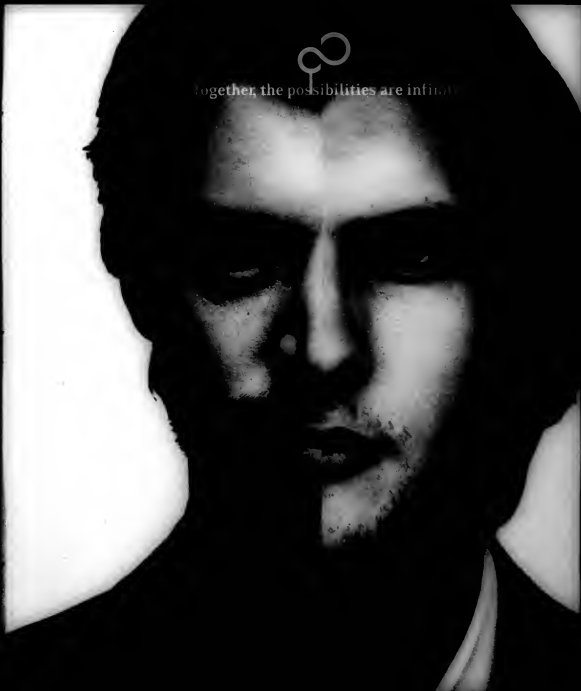


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The speed at which critical national functions are being moved online increases the risk of vulnerability, say former CIA and NSA security experts in exclusive interviews with *Computerworld*. By Dan Verton

**W**HILE cyberterrorism may not be an immediate threat, it would be foolish not to recognize that the U.S. is facing a "thinking enemy" who will adapt to attack our critical infrastructures and vulnerabilities, says Ruth David, former director for science and technology at the CIA. David is now president and CEO of Analytic Services Inc., an independent, not-for-profit, public service research institution in Arlington, Va.

#### SECURITY

She and Bill Crowell, CEO of Santa Clara, Calif.-based security firm Cylank Corp. and a former deputy director of the super-secret National Security Agency, each participated in rare interviews with *Computerworld's* Dan Verton. They discussed the threats posed by cyberterrorist attacks and the steps that the public and private sectors should take to thwart them.

There's been speculation, even before Sept. 11, about the U.S.'s vulnerability to an "electronic Pearl Harbor" or cyberterrorist attack. How has this changed since Sept. 11, and how vulnerable are the various economic sectors to cyberterrorist attacks?

**David:** While it is true that major terrorist attacks to date have targeted human lives, I would not blindly extrapolate

that behavior into the future. After all, on Sept. 10, we would not have expected a hijacker to turn a commercial airplane full of passengers into a guided missile, and even on Sept. 12, we did not envision exploding shoes as a threat to aviation.

In the aftermath of the 9/11 attacks, those adversaries almost certainly observed the immediate effect of service interruptions as well as the prolonged economic impact of infrastructure disruptions. While the weapon used was explosive rather than cyber, it doesn't take much imagination to see that similar effects could be achieved through cyberterrorism.

**Crowell:** Clearly, the vulnerabilities of the nation to cyberattack are growing. Critical national functions like banking, financial services, health, water and communications are increasingly dependent on highly automated systems that connect the many nodes of their operations.

These changes in the degree to which business and the government are dependent on public networks have been occurring for about a decade. The disturbing thing is that all of the trends are in the wrong direction. Business is moving more and more critical functions to networks. The speed and complexity of the deployments make it difficult for them to

employ good defenses rapidly. Diversity is decreasing as we migrate more to common operating systems and common network systems.

To what extent is the war on terrorism, particularly the battle for improved homeland security, a technology problem? What roles do you see the government, corporate America and the IT vendor/developer community playing?

**David:** Technology is only one component. Without supporting policy, effective processes and well-trained people, technologies solve nothing. Deployment of facial recognition technologies at border entry points will not ensure apprehension of terrorists.

Corporate America will play an increasingly important role in developing security technologies to protect nongovernmental personnel and property that may be targeted by terrorists attacking what we are as a nation rather than what we do as a government.

**Crowell:** The battle for improved homeland security involves both technology and processes. Technology can be used to make the processes more efficient, predictable and effective.

The Transportation Security Agency, [Federal Aviation Administration] and Department of Transportation are all looking for ways to improve [airport security]. However, I am particularly concerned that many of the critical processes are now using technologies that are more vulnerable, not less. An example is the use of wireless LANs for the tracking of baggage. Without proper encryption and authentication, the baggage handling system will not prevent either insider or outside attack.

Some have said that the government's push to create a separate and secure intranet (GovNet) for sensitive government opera-

# Outflanking The Cyberterror

tions and possibly e-commerce is tantamount to throwing in the towel on Internet security. Are there viable alternatives to disconnecting from the Internet?

**Dank:** To the extent that terrorists attack symbols of America, seek to shake the confidence of the public in our government's ability to protect [citizens], and/or seek to inflict economic damage, GovNet solves nothing, since many valuable cyberassets would be left undefended. In fact, a separate network might actually impede the homeland security mission since it could further isolate government from indus-

try and the American public at a time when communication and collaboration are desperately needed.

In particular, I believe the absence of a coherent governmentwide security policy has significantly limited our ability to protect sensitive government operations.

**Crowell:** I think that the GovNet initiative has been misrepresented in the press. Perhaps this is because the government did not carefully lay out the principles in the beginning of the discussion. [The government has] advocated that the core mission systems be on separate private networks that are

highly protected from denial-of-service attacks and from hacking and cyberattacks.

The Internet would be used for e-government to enjoy the enormous reach it provides to the public. These are not new concepts. In banking and financial services, these policies have long been the basis for their risk management practices.

**Howard Schmidt,** the deputy chairman of the President's Critical Infrastructure Protection Board, said recently that the next national plan for protecting the country's critical systems and networks will be written with the help of the private sector. What do you think the immediate priorities and focus should be for such a public/private plan?

**Dank:** If I were to offer a top priority, it would be to establish trust between government and industry and among the key industry sectors. This means first and foremost to create a safe environment for the sharing and analysis of information regarding cyberattacks and discovered vulnerabilities.

My next priority would be to bolster our intrusion-detection capabilities. I worry less about the overt attacks that disrupt service than the subtle attacks designed to steal or corrupt data — attacks that may go undetected until disaster occurs.

**Crowell:** I think that there are two elements that should be part of the plan. The first is that the government should be a leader in network security and move quickly to employ the best practices for both GovNet and e-government. The second is that the [Securities and Exchange Commission] should establish the same risk disclosure rules for network security that it used to focus attention on Y2K and on disaster recovery.

Without such a mechanism, there is a strong likelihood that the vulnerabilities and risks in network-based business won't get the attention that [they need] until there is a disastrous event. I think that the disaster recovery systems of the financial businesses in the World Trade Center saved many of them from total collapse. ▶

## Terrorism 101 With Eric Shaw

Eric Shaw, a former CIA profiler and clinical psychologist who now consults for Shaw & Associates LLC, a cybersecurity firm in New York, takes *Computerworld's* Dan Varian inside the minds of terrorists.

There's been a lot of speculation, even before Sept. 11, about the nation's vulnerability to an "electronic Pearl Harbor," or cyberterrorist attacks. But there has been little evidence that terrorists value cyberattacks. What has changed since Sept. 11?

**Shaw:** There's still little evidence that traditional terrorist groups place a high priority on cyberattacks vs. using information technology for communications, command and control, and propaganda. Guns, bombs and vehicles [such as] trucks, planes and boats for delivery appear to be quite adequate for their needs, as the Sept. 11 attacks showed.

I am worried that a new operational standard has been set up for initiation. I think we are going to see more attacks on relatively unprotected civilian sites and on individuals. The same trend may occur in this country as terrorists turn away from heavily fortified government facilities to less protected corporate sites.

Are there any exceptions to the lack of terrorist interest in cyberattacks?

**Shaw:** Yes. First, there are several types of nontraditional, politically motivated groups that cannot at present be considered terrorists but have utilized low-level cyberattacks, especially denial-of-service attacks. These groups often are referred to as members of single-issue, situation, hacker, anarchist and other coalitions, often associated with our political left. They have actively organized and recruited individuals and groups for cyberattacks against their identified adversaries.

Second, I am concerned about online or face-to-face recruitment of disgruntled IT specialists. For example, there were rumors earlier this year that an al-Qaeda affiliate had placed notices into Microsoft who had introduced Trojans into Windows XP. Though denied by the company, think of the potential impact.

The IT field is one of the most international and ethnically diverse in the country, and its members... may represent a very attractive recruitment pool for terrorist organizations.

BUSINESSES ARE MOVING critical functions onto networks so quickly that it's difficult for them to deploy good defenses in a timely fashion, says Cylint CEO Bill Crowell.

# orist Threat

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Here are the tales of three trailblazers whose work in computer security and forensics have helped shape modern practices.

By Deborah Radcliff

**A**S FAR BACK as the 1970s, three women began preparing the world for the havoc about to be unleashed by networked computing. From their humble origins in law enforcement and academia, their influence on computer security practices has spread to government and private sector alike — despite the fact that two of the women had virtually no IT or scientific backgrounds.

#### SECURITY

These security pioneers include Martha Stansell-Gamm, a former U.S. Air Force judge advocate who started an arduous fight against breast cancer as she took over leadership of the then 8-year-old Computer Crime and Intellectual Property section of the U.S. Department of Justice (DOJ).

While developing the DOJ's forensics procedures for search and seizure of electronic evidence, Stansell-Gamm crossed paths with Raemarie Schmidt, who developed digital forensics procedures for Wisconsin's branch of the DOJ. Schmidt's work helped set the

standard for computer forensics now used by law enforcement agencies around the nation.

And there's Dorothy Denning, a distinguished computer science professor at Georgetown University in Washington, whose writings have set the stage for information security practitioners for the past 27 years.

#### Fight of Her Life

For eight years, Stansell-Gamm partnered with her department chief, Scott Charney, to grow the Computer Crime and Intellectual Property section of the DOJ. Logically, Stansell-Gamm was the best choice to fill Charney's shoes when he left the department in 1999. But the same week she learned of her promotion, she received news of a different sort: She was diagnosed with advanced breast cancer.

The department was already smarting from the loss of its founder, and Stansell-Gamm worried about what would happen to her unit during this leadership vacuum.

"All I could do is put one foot in front of the other, count on the section to do right by me and to do right by our mission," she says. "Everyone just handled it. They jumped into unfinished, high-level projects they had no experience with and took over what needed to be done."

Now cancer-free, she's been back on the job for two years, leading the DOJ's efforts in multijurisdictional computer crime investigations and coordinating DOJ representation in developing international cyberlaws. The biggest and most difficult part of her job, she says, is getting all the players — corporate victims, law enforcement, state attorneys and intelligence agencies — to "kick the ball" to one another.

"We're like a bunch of 5-year-olds

#### WHO IS SHE?

### Martha Stansell-Gamm

**Position:** Chief, Intellectual Property and Computer Crime, DOJ

**Education:** Phi Beta Kappa, DePauw University, Greencastle, Ind.; law degree, Georgetown University; master's in international law, Harvard University

#### Claims to fame:

■ Helped shape amendments to the 1986 Computer Fraud and Abuse Act

■ Group chairwomen and editor, Federal Guidelines for Searching and Seizing Computers, 1994

■ U.S. representative in Council of Europe's Cybercrime Treaty, 1992-2001

■ Coordinated the DOJ's participation in many high profile investigations, starting with the investigation that landed computer cracker Kevin Mitnick behind bars in February 1995

playing soccer, where we all huddle around the ball," says Stansell-Gamm, who was a soccer mom when her three kids, now teens, were younger. "At public speaking engagements, I tell audiences that we need to position ourselves on the field and pass the ball."

That type of statement is typical of Stansell-Gamm, says Charney, who became Microsoft Corp.'s chief security officer April 1. "She sees the complexity of each issue," he explains of her leadership from 1994 to 1996 in amending the sentencing guidelines to the 1984 Computer Crime and Abuse Act. "For example, she recognizes that enforcing new laws on the Internet could chill free speech, so she has been careful not to turn evolving social mores on the Internet into definitions of criminal activity," he says.

#### Forensics Forerunner

Working law enforcement investigations in the mid-1990s was an exciting time for Schmidt, a digital forensics pioneer and supervisor of curriculum development for the computer crimes section at the National White Collar Crime Center in Fairmont, W.Va.

"We'd go in behind the mid team and

# The Security Sentinels



#### Who RAEMARIE SCHMIDT

**Position:** Supervisor, curriculum development, computer crime section, National White Collar Crime Center, Fairmont, N.Y.  
([www.cybercrime.org](http://www.cybercrime.org))

**Education:** Bachelor's degree in chemistry, University of Wisconsin (1980 to 1984)

■ Chaired the DOJ's working group to develop digital evidence seizure and processing protocols for the state of Wisconsin

■ Assisted on search warrants and laboratory forensics examinations for the Wisconsin State Crime Lab and the National White Collar Crime Center from 1992 to 1998

■ Trainer at the Federal Law Enforcement Training Center, state agencies, NATO and the American Academy of Forensic Sciences

■ Oversees curriculum development at the National White Collar Crime Center

#### Who DOROTHY DENNING

**Position:** Distinguished professor, computer science, Georgetown University

**Education:** Bachelor's and master's degrees in mathematics, University of Michigan; doctorate in computer science, Purdue University

**Timeline to fame**

■ Founder of Georgetown's Institute for Information Assurance

■ Writer on encryption, intrusion detection, information warfare and many other must-reads for IT security leaders

■ Awards include Security Innovator, Time magazine, 2001; TechnoSecurity Professional of the Year, 2000; National Computer Systems Security Award, 1999

■ Association for Computing Machinery (ACM) fellow, 1999; ACM Recognition of service award, 1995, 1997, 1999, 1994, 1995



use an early precursor to the jazz and Zip drives to make evidentiary backups from parallel port to parallel port. We had to do this without shutting down the legitimate business completely," she says. "And in home searches, you'd walk into a disaster zone — cables, equipment and floppies everywhere."

Before getting into computer investigations, Schmidt tested drugs for 20 years, first for a pharmaceutical company and then for law enforcement, where she set up the drug testing facility for the Wisconsin State Crime Lab in Milwaukee. That's where she discovered her knack for technology, linking laboratory testing instruments to early Linux systems in the late '80s by soldering on the cable connectors herself.

So when her boss returned from a seminar in 1992 and charged Schmidt with developing a computer forensics department, she approached it scientifically and technologically. She used her science skills to turn the ad hoc process of computer investigations into a modern-day forensics practice. Then she used her technological prowess to track down computer vulnerabilities and technologies to aid investigators.

Now, as supervisor of curriculum development, she's overhauling old courses and adding new ones, along with hiring and screening contractors and investigators and overseeing instructor development. And she's still researching the ways new technologies will be used in crimes.

"In the last year, we've really only seen the tip of the iceberg in digital forensics," says Chris Stimpich, co-founder of Digital Intelligence Inc. in Waukesha, Wis., who worked with Schmidt at both the Wisconsin State Crime Lab and the National White Collar Crime Center. "I think Raemarie's going to continue to be at the forefront, pushing the envelope on the discipline of digital forensics."

#### The Security Mentor

The relationship between computing subsystems and user access to resources intrigued Denning in the 1970s. She wrote her doctoral thesis on secure information flow in 1975, some 20 years before colleges were thinking about information security courses.

"The topic of my thesis was how to keep top-secret data from reaching an uncensored user, which was a challenging problem for the Department of Defense, who wanted all levels of users

to share the same computer," she says. After publishing her thesis, Denning kept writing. Since then, her 120 articles, three books and television and radio appearances, along with congressional testimonies, are the basis for much of today's thinking on IT security.

"She's become a mentor for those of us who are operational in the field, even though she's an academic," says Howard Schmidt, co-chairman of the President's Critical Infrastructure Protection Board in Washington. "Her writings give me a balance, particularly those on information warfare, intrusion detection, and even her unpopular belief on the Clipper chip and encryption-key escrow," he says, referring to when Denning positioned herself on the side of the government for these collection and recovery initiatives.

When she did, the outcry was deafening.

"The attacks were very personal," she says. "I had new names, like 'Wicked Witch of the East.' I would come home very stressed out."

Denning coped by doing more research, even polling Howard Schmidt and others about the impacts of encryption on evidence recovery. She also responded in forums, including a July 1996 Hot Wired "Brain Tennis" match with John Gillmore, co-founder of the San Francisco-based Electronic Frontier Foundation. Eventually, as the government's proposals failed and Denning took a position in favor of easing encryption export laws, the criticism died down.

As Howard Schmidt says, Denning's position is all about balance. She talks of the balance between computer security and operability, something that made her quit her job in the early '80s at Menlo Park, Calif.-based SRI International Inc., where her responsibilities included trying to secure databases. She left for a position at Digital Equipment Corp. that focused on usability. Denning continues to analyze trends in network attacks for signs of terrorist activity.

"People want to know if cyberterrorism is going to happen and when it will happen," she says. "It's hard to know because it's speculative." ■

**Quick Link**

For links to news information about these women, visit:

[www.computerworld.com/020809](http://www.computerworld.com/020809)  
Nancy Wilson was recruited by the White House's Critical Infrastructure Assurance Office. Learn more about her at [www.computerworld.com/020809](http://www.computerworld.com/020809)

# MCSE Concerns Rankle IT Pros

Despite the fact that Microsoft did an about-face last fall and will continue honoring MCSE NT 4.0 certifications, many IT professionals are still miffed about its credential requirements. By Julekha Dash

**M**ONTHS OF CONFUSION regarding Microsoft Corp.'s position on its Windows NT 4.0 certification exam have left some IT professionals feeling uncertain about the future of their credentials.

In 2000, the software maker announced that the Microsoft Certified Systems Engineer (MCSE) NT 4.0 certification would expire by the end of 2001 and that IT professionals certified on NT 4.0 would have to upgrade to Windows 2000 in order for their certification to remain valid. Some critics saw this as an attempt to strong-arm IT workers and the industry at large to migrate to Windows 2000.

In response to these complaints, Microsoft reversed its position in October. But in spite of the turnaround, some IT workers say they are still wary of the company's policy regarding certification exams.

## Certification Bandwagon

"A lot of people jumped onto the certification bandwagon in hopes of finishing the MCSE certification within six to nine months or a year," says Matt Pierce, a network administrator at Safesent Inc., a Denver-based company that provides applicant-screening services for apartment communities. But when Microsoft announced it would retire the NT 4.0 exams, some IT workers abandoned the idea of getting certified in a technology that's on its way out, he says.

Then, when Microsoft reversed its decision and said it wouldn't retire NT 4.0, IT professionals lost valuable time that they could have spent preparing

for the NT 4.0 exams, Pierce adds.

One compromise Microsoft offered until the end of last year was an accelerated Windows 2000 track for those who had passed three NT 4.0 exams. If an IT worker were to pass a one-shot examination, he could forgo the normal four core exams — and become certified in Windows 2000. Three elective exams were also required in either case. But Microsoft stopped offering the one-shot exam in December of last year (see timeline).

Garrette Slonscher, a network engineer at Response Computer Group Inc. in Milford, Del., failed the accelerated exam in December. Slonscher says he "doesn't have time to study five hours a night" in addition to working and spending time with his family. His employer spent \$10,000 to send him to an MCSE "boot camp" to prepare for the MCSE NT 4.0 exams.

Slonscher says he was shocked when he heard that Microsoft would retire

the certifications. "I didn't think I'd lose the certification," he says. "If you get a degree in electronic engineering, you don't lose the engineering degree because of new technology."

Even though Microsoft decided not to retire the MCSE NT 4.0 credential, Slonscher is skeptical as to how long it will be recognized before Microsoft begins pushing newer technologies such as .Net instead of Windows 2000. "Everybody is still overwhelmed by Win 2k and Active Directory, even though [they have been] out for a long time," says Pierce. As Microsoft introduces new platforms, such as .Net and XP, it's difficult to keep up with every new technology, he says.

Anne Marie McEwen, director of certification skills and assessment at Microsoft, says the company decided in October that it wouldn't "decertify" any other Microsoft certificate holders. "People in the program can be assured that they are [certified] for life," she adds.

## A Change of Heart

David Sanders, general manager of Management Systems Designers Inc. in Vienna, Va., applauds Microsoft for reversing its decision last fall. This change of heart allows companies and IT professionals greater flexibility to use the technologies with which they are most comfortable, says Sanders, whose company is a certified Microsoft Solution Provider that does high-tech work for federal agencies.

Although some larger companies have specified that they want to hire people who are certified in the latest versions of Windows, NT is still very popular, notes Sanders. "When you look at the business community, NT and derivatives still dominate," he says.

Yet some analysts think getting recertified is the only way to stay competitive in the technology industry. "If

## BOTTOMING OUT ON BONUS PAY

According to a new report from PwC Partners LLC, bonuses for Windows NT specialists decreased 48% from the first quarter to the fourth quarter of last year, due primarily to a combination of layoffs, a decline in demand for NT specialists, and cuts in spending on servers and PCs.

ATM	33%	50%
CC-Mail	29%	44%
Windows NT	17%	41%
Routing	18%	40%
PowerBuilder	17%	38%
Lawson Software	11%	36%
J.D. Edwards	11%	36%
HTT	25%	33%
YOGA-net Switching	30%	33%
Ethernet	22%	30%

SOURCE: 2002 WIND REPORT TECHNICAL SPECIALISTS AND CERTIFICATION PAY © PWC PARTNERS LLP, NEW CANAAN, CONN.

you play in this game, there is a constant recertification process," says Dave Murphy, membership director at the International Association of Information Technology Trainers Ltd. in Elkridge, Md. And if Microsoft decides to retire a particular certification, people can simply explain to their employers that they were "certified until Microsoft canceled the exam," he adds.

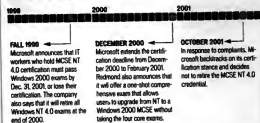
The best move for time-pressed IT workers is to be selective about their Microsoft certifications, says Pierce. "There is no need to be certified in everything Microsoft does. It's not realistic," he says. "Companies are not always quick to jump on the latest Microsoft product until multiple service packs have been released and the bugs have been eliminated."

In addition, says Pierce, IT workers would be better prepared in the marketplace if they broadened their skills by getting certification through other vendors or organizations. ▀

Dash is a freelance writer in Lewis, Del. She can be reached at mail@julekhashash.com

**Quick Link**  
To read our Computerworld news about Microsoft Certified Systems Engineers, visit our Web site: www.computerworld.com/172898

## MCSE Timeline





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# Plugging Into Portal Returns

While early adopters of enterprise portals know what kind of functionality they want out of these systems, many organizations are still struggling with how best to measure their benefits. By Pimm Fox

**W**HATEVER YOUR VIEW of enterprise portals — and there are as many opinions as there are IT infrastructures — the concept of centralizing the location of pertinent information and transactions is a solid one.

Portals can be valuable tools for enhancing business processes.

Audakoro Petroleum Corp. in The Woodlands, Texas, uses software from Pleasanton, Calif.-based PeopleSoft Inc. to make pay stubs available to employees electronically, thus cutting its postage and processing fees.

AmeriKing Inc., the largest independent Burger King Corp. franchisee in the U.S., uses a portal from San Francisco-based Plumtree Software Inc. to give its dispersed employees access to corporate performance data.

At Westchester, Ill.-based AmeriKing, inventory reports, sales and finance data, human resources information, e-mail and corporate documents are all available on a personalized, Web-based desktop. Indeed, company officials estimate that the portal saves the firm about \$500,000 per year on reduced printing and distribution costs for things such as physician directories, employee profiles and employee contact information.

The portal also allows AmeriKing

employees to change personnel information about themselves to their employment and benefits files — thus helping to cut the company's human resources costs.

But to extract these kinds of returns from a portal requires specific planning on the part of business managers — not just IT personnel.

"There are three overarching components to a portal strategy," says Laura Ramos, research director at Giga Information Group Inc. in San Jose. "First, you have to define who is going to use the portal, then you need to look at what you currently have in the way of IT infrastructure, and finally, you need to measure the payback — the before and after."

## The Breakdown

But while companies may know what they want their portals to deliver and may even have a concrete assessment of their IT structure, they're still grappling with how to measure their returns. A study published by Cambridge, Mass.-based Forrester Research Inc. in August 2001 revealed that 41% of 49 portal managers from Global 3,500 firms using portals weren't measuring their benefits at all, and "20% don't know if they are," says Frank Gillett, a Forrester analyst (see chart).

Keeping measurement in mind,

portals by definition need to identify specific user groups that will benefit from their content or available applications. Once a portal use is identified, there are four basic categories of portal products to consider.

Companies such as BEA Systems Inc., IBM, San Microsystems Inc.'s iPlanet division and Oracle Corp. all offer tools for building portals, because some users see the need to modify existing applications or need additional customization in order to meet the portal's requirements.

A second category includes traditional enterprise resource planning vendors, such as PeopleSoft, SAP AG and Siebel Systems Inc.

A third category is defined by knowledge and content management vendors, such as Redwood City, Calif.-based BroadVision Inc., Microsoft Corp.'s SharePoint Portal Server and Austin-based Vignette Corp.

Finally, there are pure portal companies, such as Plumtree and San Francisco-based Epicentric Inc.

## Keys to Success

The technical challenge of assembling the power of many back-end applications and information at one location doesn't appear to be a major factor in the success of enterprise portals. Instead, the problem right now is a leap of faith.

"[For] large corporations [that] have started their portal efforts, it's a competitive advantage," says Nate L. Root, an analyst at Forrester. They have to "get very detailed about who goes to it and why," he says.

Those issues are supported by a Web-based survey of Fortune 2,000 companies conducted in December and January by Redwood City, Calif.-based Enviro Inc. Of the 156 IT leaders who responded, 70% acknowledged that they couldn't measure where and why visitors leave a business process at a portal. And when asked how they measure the return on investment of their portals, the majority of respondents said they don't measure it.

The key, say analysts, isn't to focus on the technology but to evaluate current business practices to see what kinds of information are delivered and where a process can be made more efficient with self-service techniques. Without this approach, enterprise portals will end up as rudderless IT projects. ■

**Quick Links**

For links to other stories on portals, go to [www.computerworld.com/72362](http://www.computerworld.com/72362)

## Portal Payback

### 2 How are you measuring the benefits of enterprise portals?

We aren't	61%
Don't know	20%
Cost savings	10%
Web site/line time	9%
Other savings	6%
ROI analysis	5%
Maximum follow-up of a task	5%
Number of IT requests	4%

### 2 What information, news, data and activities are in the portal?

Security information	62%
Corporate news	70%
Business directory	61%
Information and training	49%
Operational information	37%
Personal information	30%
Company data	29%
Financial news	27%
Policy information	26%
People's calendars	24%
Industry news	20%
Subscription lists	19%
Online IT help desk	18%
Web surfing	14%
E-mail	10%

### 2 What is the total cost — products, staff, consultants — of your initial portal effort?

<b>SMALL-SCALE PORTALS</b>	
Minimum spent	\$2,250
Mean spent	\$657,390
Maximum spent	\$300,000
<b>LARGER PORTALS</b>	
Minimum budget	\$5M
Mean budget	\$2.05M
Maximum budget	\$1M
Minimum budget	\$25,000

### \* MULTIPLE RESPONSES ALLOWED

SOURCE: A STUDY CONDUCTED BY FORRESTER RESEARCH, CAMBRIDGE, MASS., IN WHICH 49 PORTAL MANAGERS AT GLOBAL 3,500 COMPANIES WERE SURVEYED. RESULTS WERE PUBLISHED IN AUGUST 2001.



- This is the FOREMAN
- ◆ That placed the Order
- That went through the Dealer
- That notified Contracts
- That alerted Manufacturing
- ◆ That checked with Accounting
- That contacted Shipping
- That sent the Delivery
- That sealed the Process
- ◆ That lives in the Business Integration Software
- That we built Together.



CrossWorlds has joined with IBM to provide comprehensive business integration from your first step to the finish. Our technology powers WebSphere® to not only just connect your applications — but make all your processes work together. For the whole story, visit [ibm.com/websphere/crossworlds](http://ibm.com/websphere/crossworlds)

**IBM**

# Why Rookie IT Managers Make Classic Blunders ...

... and how you can help them succeed. A Harvard Business Review writer offers some suggestions

New managers often fail for predictable reasons. In this month's Harvard Business Review, Carol A. Walker tells how good supervisors can help rookie managers avoid the obstacles that so often trip them up. Walker is president of Prepared to Lead ([www.preparedtolead.com](http://www.preparedtolead.com)), a management consulting firm in Weston, Mass. She previously worked for 15 years as an executive in the insurance and technology industries. Walker told Computerworld's Kathleen Melymuka that these observations and lessons apply especially to IT, where the work of individual contributors and managers is hugely different.

**Q: Why do so many rookie IT managers fail?**  
**A:** Managing is always different from doing, but in IT, the difference may be even greater than in other fields. The reason they don't succeed is that the difference is underappreciated. They don't truly understand their new role and how they should be spending their time, which is fundamentally different.

**Q: What is the fundamental difference?**  
**A:** It's the difference between guiding processes and communicating directions vs. rolling up your sleeves and writing code: individualized work vs. communication.

**Q: Why do new managers hesitate to ask for help?**

**A:** Rookies are already feeling vulnerable. If they're pretty high in self-confidence, they're more likely to ask for help, but many don't. In our society, asking for help tends to denote weakness, and IT is a field where people are even more used to having the answers.

**Q: As the rookie's boss, how can I tell whether he needs help?**

**A:** Observe the manager's interactions with his staff. Find opportunities to talk to staff independently — not going to the manager, but about what's not going

in the department and how clear the objectives are. If objectives are clear and people seem focused, he's probably doing a good job.

**Q: If a rookie needs help, how can I show that it's OK to ask?**

**A:** There's no substitute for communication. Have regular meetings with rookie managers — maybe more frequently in the beginning. Ask probing questions about big-picture issues.

**Q: Why do new IT managers often find it hard to delegate?**

**A:** I suspect that in IT, the nature of work is so detail-oriented that it attracts a certain type of personality that is more comfortable with high degrees of detail. They tend not to like to give up control, and delegating is a matter of trusting and giving up control.

**Q: As the boss, how can I help?**

**A:** Clarify expectations. Let them know the expectation is not that they're doing everything, and help them understand that this is a huge transition, not a little thing. Let them know it's normal to feel they may be not as productive as they used to be. At some levels, it may be still part of their job that they do some IT work, so it's important to talk about what proportion of time you expect them to be doing this sort of thing vs. this other sort.

**Q: You say many rookie IT managers have image problems. What are some of those?**

**A:** The issue is that rookies tend to not realize the influence they have on the people looking up to them as supervisors. If they have a poor reaction under pressure, if they're short with others, or roll their eyes at issues that are tiresome or lose their temper, that demonstrates to the team that that's acceptable behavior. They lack awareness that every behavior they demonstrate is telling everyone else what is acceptable.

**Q: If I see a rookie manager doing this, what do I do as his supervisor?**

**A:** Often, they're not aware of the behavior. Take them aside and raise their consciousness: "I'm pretty sure you have no idea you're doing this, but it's likely to have this impact on your staff." Let them know that people expect a sense of calmness and control from a leader.

**Q: You say I need to drag new IT managers out of the trenches. But aren't they building rapport with the troops by diving in to fight the fire?**

**A:** Everything in moderation. Depending on the level of management, different degrees of involvement are appropriate. In true emergencies, it may make sense to roll up your sleeves, but it can become very comfortable to fight fires because it feels very productive. It can become the norm, and then she's ignoring the direction of the unit



When feedback is delivered in a supportive manner, it's the biggest gift they could receive. It allows them to grow.

CAROL A. WALKER, PRESIDENT,  
 PREPARED TO LEAD



and strategy and thinking. If she's continually putting out fires, she's also telling her staff they're not capable of handling that; they need her to do that.

**Q: Some rookies say strategic thinking is a luxury they can't afford. How can I teach a rookie who has always been tactical to begin thinking strategically?**

**A:** Use those regular communication sessions to pose the kinds of questions you expect them to be able to answer. Like, "What's the competition doing in this area?" If they can't answer, point out that this is the difference between a boss and a programmer and that a certain amount of their time needs to be spent on this.

Show them what you expect them to be on top of, and tie it to promote ability. Point out that the higher in management they go, the more they will need to demonstrate this kind of thinking, and you want to give them the opportunity to practice it.

**Q: What don't rookies get about feedback?**

**A:** When feedback is delivered in a supportive manner, it's the biggest gift they could receive; it's the ability to see themselves as others see them. It allows them to grow. And people don't get that. Sometimes feedback is not given in a perfect way, and then people are not open to receiving it.

**Q: So they have to learn to give and receive feedback?**

**A:** Yes. And as in a dysfunctional family, when they receive feedback given in a bad way, they either hesitate to give feedback themselves because it was so negative for them or they copy the behaviors they see and give their own feedback in public or in an uncaring way or without trying it to success factors. Feedback is a touchy issue. Whether you give or receive it, it requires an environment of trust. As the boss, you have to demonstrate how to give good feedback.

**Q: How do I, as the rookie's boss, negotiate the fine line between coaching and micromanaging?**

**A:** If you set up that regular meeting time to talk about things, you're not going to be in their face. Focus on their asking and your answering questions.

In the beginning, they may not be able to know the right questions, so you ask the questions. And if you have to raise an issue, raise it in the form of a question: "What do you think of this area?" — not "We're not doing enough in this area." ▀

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## “Dear Career Adviser:

*I am a network support/PC technician in Michigan who was laid off in December. I have six years' experience, four at my prior employer, where I earned \$43,000 per year. While my earlier compensation wasn't excessive, in this job market I might need to take a job at \$35,000 or*

*lower and continue looking. However, I want to avoid job-hopping and wonder if I should be patient and continue seeking a job with higher pay to avoid starting problems regarding my salary. Are job contracts an option?*

— LOWERED EXPECTATIONS

### Dear Expectations:

You can't fight the market, says Darrell W. Gurney, a Los Angeles-based career coach

and author of *HeadHunters Revealed: Career Secrets for Choosing and Using Professional Recruiters* (Hunter Arts Publishing, 2000). That's especially true because we're now in an employer-driven market that will last a while longer.

Unless your cash is running low, come up with a timeline and explore as many options as possible before accepting a lower salary. If you must take a cut, at least do it with a company that provides an educa-

tion benefit or the opportunity to learn new skills. That way, once the market turns, you'll have a reason to ask for a boost in your salary with no explanation needed.

### Dear Career Adviser:

You and others have mentioned bioinformatics as an up-and-coming field. As a C/C++, Unix person, I am concerned about my ability to move into bioinformatics. I also wonder

whether this field is stable.  
— CALIFORNIA DREAMER

### Dear Dreamin':

Interest in bioinformatics is growing because of its role in high-profile research efforts like gene sequencing. The field involves handling and analyzing massive amounts of data. Your skills in Unix and C/C++ are highly portable, particularly if you learn scripting languages such as Perl or Python, build up your structured and relational database skills and expand your operating system knowledge to include Linux.

But given the recent demise of Oakland, Calif.-based Double-Twist Inc. and the state of biotech

venture funding, you might want to hedge your bets and pursue work within a university, a government agency or an established pharmaceutical company.

Investigate the University of California Extension at Santa Cruz, which offers a certification program in bioinformatics, says Gary Schultz, principal analyst at Sunnyvale, Calif.-based Multimedia Research Group Inc., which recently published a report called "U.S. Bio-Computing IT Market: Bio-Computing and Pharmaceutical Companies."

You might want to read Cynthia Gibbs' article "Computers + Biology = Bioinformatics" at [www.orcill.com/news/bioinformatics\\_040101.html](http://www.orcill.com/news/bioinformatics_040101.html).



## WORKSTYLES

### On Course at Alaska Airlines

Steve Jarvis, the vice president in charge of e-commerce at Alaska Airlines, describes the IT culture that has emerged in his company in response to the fast-changing industry it competes in.

What are the most critical systems supported by your department? "Our Web servers, connectivity to the host reservation system and our production databases. Our Web-based transaction systems bring in 20% of our \$400 million revenue, so they're pretty critical."

What are travelers able to do via the Web? "We have a full suite of travel purchase needs, plus day-of-flight sta-

tus, including [Federal Aviation Administration] feeds, so you can see where your particular aircraft is, and the world's first Web check-in."

How have the events of Sept. 11 affected your group? "We had to look at our priorities and pursue projects offering cost savings."

How would you describe the pace of the work in general? "It's always hectic, not routine at all — there's always a challenge."

Describe situations that might come up. "Pricing is so dynamic that we have to react to what our competitors are doing, sometimes with no

notice. When you get up with a to-do list for the day, it can get blown away pretty fast."

How would you describe the IT culture? "It's a very dot-com-ish kind of environment. There are 11,000 in the entire company, but in our world, because we're in an evolving world where IT and business have to work so closely together, we tried to create a culture where we're a small Web company within this larger company."

How much interaction does your IT department have with and across other departments?

"We have a floor of the building where marketing and IT live together. At any given time, we have five or six projects under way, and they're complicated in terms of automating processes that have always been handled by humans, so the business person needs to be just on the other side of the soft wall. If we weren't co-located, it would add lots of days to the development process."

How are career advancement and training handled at your company? "Most of our development team has been homegrown from the airline in some way."

"We've hired from the outside, but our core architects have come from within, probably because of the uniqueness of airline travel commerce."

What aspect of work do you look forward to each day? "I look forward to working with the team. We take our team personality here, so our team is great to work with."

What aspect of work do you dread each day? "I guess the dynamic nature of pricing and the need to run off at a moment's notice to counter what another airline does. That's a distraction from everything we're doing that's innovative. But it's not something we can say no to."

— Mary Brandel  
brandel@alaska.com



### Alaska Airlines

Who they are: Alaska Airlines

Main location: Seattle


Interviewee: Steve Jarvis, vice president, e-commerce

Staff size: 200 in the IT division; 20 in the e-commerce group



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"From now on, that's Mr. Geek to you."



## Accelerating Growth in a Multi-Dimensional World

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- Robert Gray, Research Director, Worldwide Storage Systems Research, IDC
- Richard Lary, Partner, TuteLary, LLC
- John McArthur, Vice President, Worldwide Storage Research, IDC
- Charlotte Rancourt, Research Director, Storage Systems, IDC
- Janet Waxman, Program Director, Systems and Storage Distribution Channels, IDC
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# TECHNOLOGY

NICHOLAS PETRELEY

## THIS WEEK

### RADIO TRACKING

Radio-frequency tagging adds up-front expenses but can cut costs by automating and speeding up data acquisition and processing. **PAGE 46**

### WEB ACCESS TO LEGACY APPS

A major U.S. trucking company works to keep customers happy by making its enterprise database management system accessible through a browser. **PAGE 46**

### FUTURE WATCH

Texas-based Cycorp calls itself a leader in supplying "formalized common sense." Using a type of symbolic logic called "predicate calculus," the company is trying to codify everything a person knows and store it in a database. **PAGE 46**

### 64-BIT BOOST

A new generation of applications running on .Net Server and Intel's Itanium will eventually bring 64-bit computing to the Windows masses. **PAGE 50**

### QUICKSTUDY

A peer-to-peer network is one in which two or more PCs share files and access to devices such as printers without requiring a separate server computer or server software. Learn more in this week's primer. **PAGE 52**

## The Road to Cairo

**T**HE YEAR IS 1992. Jim Allchin reveals Microsoft's plans to deliver a version of Windows NT, code-named Cairo, in 1994. Cairo is slated to use an Object File Store (OFS) as its file system. OFS is an object-oriented database designed to make it easy to search documents and other structured data by content. Fast forward to 2002. The continued status of OFS can best be described by the famous Monty Python cheese shop sketch (see [www.montypython.com](http://www.montypython.com)).

*net/scripts/cheese.php* for the complete script). In the sketch, the customer (John Cleese) asks the clerk (Michael Palin) for every conceivable type of cheese, but the shop is out of stock on every item. This leads to the now classic exchange, which exploits Cleese's exceptional timing and delivery:

Cleese: "It's not much of a cheese shop, is it?"

Palin: "Finest in the district, sir?"

Cleese: "Explain the logic underlying that conclusion, please."

Palin: "Well, it's so clean, sir?"

Cleese: "It's certainly uncontaminated by cheese."

Similarly, 10 years after Allchin's initial promise, Windows remains uncontaminated by many of the features originally slated for Windows NT and Cairo, including OFS.

There is a very simple explanation for the delay in the case of OFS. Microsoft thought it might need OFS to win the battle against OS/2, which already had an object-oriented foundation and threatened to include a database-oriented file system. As it turned out, Microsoft was able to beat OS/2 by withholding Windows 95 licenses for IBM PCs, as was documented in Judge Thomas Penfield Jackson's findings of fact. With OS/2 out of the way, Microsoft could put OFS on the back burner in order to address other pressing threats to its desktop monopoly.

Now OFS is back. Allchin stated last month that OFS is scheduled to go into the next major release of Windows, code-named Longhorn. (Given the lesson of the Monty Python sketch, no doubt Microsoft is referring to the mild cheddar cheese called Longhorn, and not to cattle.) Call me a paranoid cynic, but I'm betting Microsoft is resurrecting OFS as a means to make data more accessible to users while making it less accessible to developers. This would stifle competition from one or more products or technologies, most likely

competing productivity applications.

Having said that, an object store based on SQL Server technology is a good idea, though not necessarily the best design for a file system. I've advocated this approach for a long time, and I don't intend to stop just because Microsoft might abuse it. But if you are looking for a much better idea, check out the ReiserFS file system. The file system that Hans Reiser proposes is similar to OFS in one respect: Both are vaporware. But Reiser's vaporware is better than any I've seen in this category.

If I had to summarize Reiser's objectives, I would say that one is to eliminate as many distinctions as possible among various types of files, directories, devices or anything else that can be represented within a file system. The upcoming ReiserFS 4 proposes to do this by turning everything — streams, directories, attributes (time stamps, security settings and others) — into files.

Another goal is to be able to search the file system without having to impose relational database structure upon it. Reiser's examples don't always support his case, but the weakness is in his examples, not his principles. For example, he conjures a story in which you can't search for Santa Claus because the arbitrary structure of the database makes it nearly impossible to define the relationship among Santa, reindeer and chimneys. What Reiser neglects to mention is that a brute-force search engine covers a multitude of structural sins. Unfortunately, the price you'd pay in performance, complexity and disk space (or some combination of these) would outweigh any benefits you'd reap by imposing an arbitrary structure on the file system and then working around the limitations with brute force.

In the end, Reiser's conclusions are perfectly valid. I hope we see the vapor condense into reality before the cheese shop gets its next shipment. ▀



ANALYST NICHOLAS PETRELEY IS A COMPUTER CONSULTANT AND AUTHOR IN HAVERTY, CALIF. He can be reached at [nicholas@montypython.com](mailto:nicholas@montypython.com).

**A**SSOCIATED FOOD STORES INC. says its supply chain operations are running more efficiently and securely, thanks to recently installed next-generation wireless radio-frequency tags.

The firm is one of a handful of companies beginning to explore the use of RF tags. Until these tags came on the scene, tagging systems — even wireless ones — typically relied on warehouse personnel or others using handheld scanners to read bar-coded tags. RF technology takes the process a step further with sophisticated tags that can be attached to inventory or trucks. These new tags can communicate location and environmental data via antennas to back-end systems without requiring manual intervention. In addition, the technology could boost security, note analysts, who cite the disruptions caused by the recent terrorist attacks on the U.S.

#### Tagging Up

Last August, Salt Lake City-based Associated went live with a system using tags from WhereNet Corp. in Santa Clara, Calif., and supply chain applications from OMI International Inc. in Schaumburg, Ill., to automatically get extensive data captures from the trailers in its yard at regular intervals.

Tim Van de Merwe, internal logistics manager at Associated, says the firm can locate any of its hundreds of trailers to within a foot, tell when one leaves its distribution center, forward alerts to retailers in the event of delays and even tell if refrigeration units in the trailers are maintaining the correct temperatures. By getting an accurate, near-real-time picture of its trailers' locations and conditions, Associated has reduced the number of its leased trailers and personnel. It has also cut down the amount of spoiled produce, which could add up to \$100,000 per year.

The \$50 tags are 0.5 in. high by 2.5 in. long by 1.5 in. wide and are attached to trailers by adhesives or me-

## Cool Stuff

At Associated Food Stores, RF tags mounted in delivery trucks keep tabs on where the vehicles are and how well they're cooling their cargos. The system's expected payback over previous manual systems is one year or less.



chanical fasteners. They flash signals every four minutes to 19 antennas connected by five miles of cable. The Windows-based WhereNet system and embedded database takes these feeds and determines the location and status of Associated's trailers and other mobile assets. This information is then passed to OMI's management application for an up-to-date map of Associated's yard.

One major challenge, says Van de Merwe, is making sure the information is accurate, which requires constant testing. Prior to using the RF tags, it could take an hour to capture data manually on the trailers, and "nine times out of 10, the process was inaccurate," he says. "You never captured live information."

If there is a spike in temperature, indicating an opened trailer door, the system automatically alerts a security person. The system is expected to pay for it-

self within a year, although Van de Merwe wouldn't comment on the specific costs involved.

The WhereNet system uses its own proprietary signaling standard, which it has submitted for industry ratification. WhereNet appears to be ahead of its competitors in this field, say analysts, but other companies are making gains. For example, Thorfare, N.J.-based Checkpoint Systems Inc. has entered into an alliance with New York-based consumer package maker Westvaco Corp. to provide similar offerings.

#### Standards Needed

Pete Abell, an analyst at AMR Research Inc. in Boston, says there are competing RF standards from different vendors, but standards bodies such as Uniform Code Council Inc. in Lawrenceville, N.J., and EAN International in Brussels are working to create specifications that would enable the technology to work in supply chains globally. "Major retailers and suppliers are putting money into it to make it happen," he says. In terms of things such as loss prevention or tracking expiration dates, Abell adds, RF tags already have a "compelling value proposition."

There are implementation challenges. At Ford Motor Co., the biggest issue in rolling out the WhereNet system was standardizing the various radio frequencies and business practices, says Scott Hollister, a project manager at the car manufacturer.

Ford went live with WhereNet in August 2000 at a truck facility, and in December 2001, it rolled out a version of the system to 22 more plants. Currently, the tags sit on the rear-view mirrors of newly assembled trucks and report on their locations in the yard. They also report the status of the vehicles in the quality assurance process and ensure delivery to appropriate dealers as soon as possible.

According to Ford, by bolstering the timely inspection and movement of vehicles, the company has saved close to \$1 million in holding costs and gained improved customer satisfaction. ■

**Quick Links**

Learn how another transportation company, Fryer Inc. in Oklahoma City, is using wireless connectivity to stay in touch with its trucks and control temperature. [www.computerworld.com/728536](http://www.computerworld.com/728536)

**Radio tagging of in-transit materiel speeds data gathering in the supply chain, cuts costs and adds new controls. By Marc L. Songini**

# It Plays Radio Tag



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Internet access, it is a good thing, managers at Roadway claim. They know that the "open system" architecture in mainframe, proprietary and the ITMII used in Web-based design don't mix very easily.

So when the Akron, Ohio-based trucking company decided to make its enterprise legacy database management system accessible to users through a browser-based interface, its IT managers planned their strategy carefully.

We told that our system, the Roadway Model 303 database, was perfect for a public of handling the client and from the world at large," says Gary Rubley, manager of applications development at Roadway. The goal was to develop a access point for users trying to connect from outside the corporate link.

"The key was how to minimize the investment we had in the system and reengineering the system, but reusing it," Rubley says.

Everything the company knows about cash shipment, including pay-invoice status, is run off one IBM mainframe application. Computer Corporation of America's CCA Model 303 database, has centralized its entire business on this transaction-based enterprise database since 1988.

Built in the 1960s, the Model 303 industrial strength software runs on IBM's C/P-390 operating system and compatible mainframe systems. It can perform query and transaction processing on MVS, cross-platform and virtual extended storage systems. The

software also is designed to handle multiple access to the CCA database and to support parallel processing across multiple users online. Model 303 users of the system is to be a device of data and thousands of contents of online users to continue to be much like Mass-based CCA.

Model 303 stores all of Roadway's mission-critical data and operations. It also handles customer inquiries, freight shipment, billing, ship-invoice, trucking inventory and computerized information according to the company. The system tracks more than 60 million shipment, issues 500,000 customer records and processes more than 3 million transactions per day.

Roadway handles over 100,000 shipments every day using Model 303. The truck for the company is continuing to work in connection to the database.

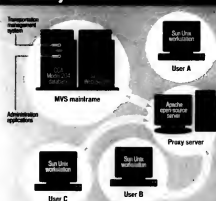
It works out from Sun Microsystems Inc. The workstations run Roadway's standard database applications, including its Web applications.

Helping it wouldn't be the last, however, the system of access to work in the company, developed to use its mainframe program is in ITMII.

The next step for Roadway is to maintain one program is its Web design group to build a system that allows Internet users to directly access the mainframe application to be linked and track shipments.

A limited time window in the mainframe, the development is on a need that Roadway's legacy applications would continue to process up to

## Roadway's Route to the Web



150,000 transactions per second.

First, using Lotus Web Server from Sun Microsystems Inc. and Cambridge, Mass., version of Model 303 allowed us to reuse our existing transportation management systems and administrative systems, such as moving and reporting, without having to rewrite our suite of applications," says Dave Parich, director of e-commerce technologies and applications development at Roadway. Lotus Web allows us to extend our existing applications written in M241 user language to browser-based presentation links.

### Seamless Links

Parich described the way the system works. The proxy server simply delivers HTTP requests to the Lotus Web server and then returns HTTP output to users' browsers, without incurring the cost of writing or buying middleware that would sit between the proxy and the mainframe, the system saved Roadway the expense of writing applications that ran on its front-end Web servers or proxy servers, he says.

Our approach saved its time and money in the initial development of 'My Roadway.com,' Parich says. "We did not have to replace our databases, and we were able to use existing IT staff to build Web-based applications."

The link between the mainframe and its new platform is so seamless that users have made it be plugged into a

technology Roadway has used for more than 14 years, according to the company. Moreover, the cost to build was not creating Web access was less than \$1 million.

Roadway's customers seem to be satisfied with the results.

"This is a value-added [service] for us," says Paul Bloszewski, transportation manager at Coldwater, a trucking, a Sanpoint, Ohio-based multimodal retailer of women's apparel, gifts, jewelry, bottle goods and accessories. "It gives us the ability to generate reports on our inbound and outbound shipments. Our transportation department needs to know that our merchandise is coming in on time and whether our vendor companies are complying with our routing instructions."

J.J. Johnson, manager of transportation at Freeman Transportation in Dallas, says, "No longer Web site is as sophisticated as Roadway's. That's one of the reasons we've retained Roadway."

Donald Broughton, an analyst at A.T. Edwards & Sons Inc. in St. Louis, agrees that Roadway is offering its customers more value for their money. But, he says, other carriers such as Yellow Corp. in Portland Park, Kan., and ABF Freight System Inc. in Fort Smith, Ark., offer similar services. And more companies should follow suit if they want to stay competitive, he adds.

"Everyone not doing it will be left behind," Broughton says. ■

# DRIVES LEGACY APPS ONTO THE WEB

Trucking company provides browser-based access to mainframe data and applications. By Linda Rosenbaum



**I**NFORMATION TECHNOLOGY managers at Roadway Express Inc. knew that the "green screen" interfaces in mainframe programs and the HTML used in Web site design don't mix very easily.

So when the Akron, Ohio-based trucking company decided to make its enterprise legacy database management system accessible to users through a browser-based interface, its IT managers planned their strategy carefully.

"We felt that our system, the CCA Model 204 database, was perfectly capable of handling the demand from the world at large," says Gary Bailey, manager of applications development at Roadway. The goal was to develop an access point for users trying to connect from outside the corporate hub.

"The key was how to maximize the investment we had in the system—not reinventing the system, but reusing it," Bailey says.

Everything the company knows about each shipment, including payment status, is run off one IBM mainframe application, Computer Corporation of America's (CCA) Model 204. Roadway has centralized its entire business on this transaction-based enterprise database since 1986.

Built in the 1960s, the Model 204 industrial-strength software runs on IBM's OS/390 operating system and compatible mainframe systems. It can perform query and transaction processing on MVS, virtual machine and virtual extended storage systems. The

software is also designed to allow rapid access to large-scale databases and to support parallel processing with a multiprocessor option. Model 204 is used by customers with terabytes of data and thousands of concurrent on-line users, according to Framingham, Mass.-based CCA.

Model 204 stores all of Roadway's mission-critical freight operations data, including customer, dispatch, freight shipment, billing, shipment tracking, invoicing and computerized rate information, according to the company. The system tracks more than 9 million shipments, houses 500,000 customer records and processes more than 2 million transactions per day.

Roadway handles 65,000 shipments every day using Model 204. The trick for the company was finding a way to connect the database to Unix workstations from Sun

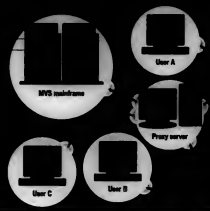
Microsystems Inc. The workstations run Roadway's nondatabase applications, including its Web applications.

Hoping it wouldn't take long to teach experienced coders new tricks, the company decided to train its mainframe programmers in HTML.

The next step was for Roadway's mainframe programmers and its Web design group to build a system that allows Internet users to directly access the mainframe application to schedule and track shipments.

By eliminating middleware on the mainframe, the development team ensured that Roadway's legacy applications would continue to process up to

## Roadway's Route to the Web



1,800 transactions per second.

Installing Janus Web Server from Sirius Software Inc. in Cambridge, Mass., on top of Model 204 "allowed us to reuse our existing transportation management systems and administrative systems, such as invoicing and reporting, without having to rewrite our suite of applications," says Dave Pavlich, director of e-commerce technologies and applications development at Roadway. "Janus Web allows us to extend our existing applications written in M204 use language to browser-based presentation layers."

### Seamless Links

Pavlich described the way the system works: The proxy server simply delivers HTTP requests to the Janus Web server and then returns HTTP output to users' browsers, without incurring the cost of writing or buying middleware that would sit between the proxy and the mainframe. The system saved Roadway the expense of writing applications that run on its front-end Web servers or proxy servers, he says.

"Our approach saved us time and money in the initial development of My.Roadway.com," Pavlich says. "We did not have to replicate our databases, and we were able to use existing IT staff to build Web-based applications."

The link between the mainframe and Unix platforms is so seamless that users have no idea they're plugged into a

technology Roadway has used for more than 14 years, according to the company. Moreover, the cost to Roadway of creating Web access was low—less than \$1 million.

Roadway's customers seem to be satisfied with the results.

"This is a value-added (service) for us," says Paul Blinnbach, transportation manager at Coldwater Creek Inc., a Sundpoint, Idaho-based multichannel retailer of women's apparel, gifts, jewelry, home goods and accessories. "It gives us the ability to generate reports on our inbound and outbound shipments. Our transportation department needs to ensure that our merchandise is coming in on time and whether our vendor companies are complying with our routing instructions."

TJ Johnson, manager of transportation at Freeman Transportation in Dallas, says, "No [carrier] Web site is as sophisticated as Roadway's. That's one of the reasons we've retained Roadway."

Donald Broughton, an analyst at A.G. Edwards & Sons Inc. in St. Louis, agrees that Roadway is offering its customers more value for their money. But, he says, other carriers such as Yellow Corp. in Overland Park, Kan., and ABF Freight System Inc. in Fort Smith, Ark., offer similar services. And more companies should follow suit if they want to stay competitive, he adds.

"Everyone not doing it will be left behind," Broughton says. ▀

# ROADWAY DRIVES LEGACY APPS ONTO THE WEB

Trucking company provides browser-based access to mainframe data and applications. By Linda Rosencrance

# Computerizing Common Sense

Austin, Texas-based Cycorp Inc. claims to be "the leading supplier of formalized common sense." CEO and founder Doug Lenat has labored 17 years to codify facts such as "Once people die, they stop buying things." He uses a form of symbolic logic called "predicate calculus" to classify and show the properties of information in a standard way.

The Cyc knowledge base adds power to applications by adding common-sense information on top of the domain-specific knowledge that occurs in every application, Lenat tells Computerworld's Gary H. Anthes.

"We see it as the next great thing," says Morris Sigel, a partner at Atlantic Capital Partners LLC in Darien, Conn. "The knowledge base provides such a broad platform for a multiplicity of products that it's mind-boggling."

## What have you accomplished so far?

We've put in 600 person-years of effort, and we've assembled a knowledge base containing 3 million rules

of thumb that the average person knows about the world, plus about 300,000 terms or concepts.

**Can you give an example?** Terms like "first date" and rules of thumb like "People are more polite on their first date than they are on their nth date." A

## WHO IS HE?

**Doug Lenat** is an artificial intelligence pioneer who is leading the human "memome" project, an effort to codify all the common sense in a person's head.

lot of these things were true 50,000 years ago, like "If you are carrying a container that's open on one side, you should carry it with the open end up." The idea is to represent these in formal logic as opposed to English sentences. You want the machine to be able to crank through the logical deductions — the consequences of these assertions — the same way you or I would.

## What will the knowledge base be used for?

I see this more as a power source rather than a single application. [For any given application], you need common-sense knowledge and domain knowledge. We are building in the common-sense knowledge.

## Are there any applications so far?

Yes, it's called CycSecure, and we are beta-testing it. Cyc knows what are normal, legitimate actions and what are actions taken by hackers, [and it knows about operating system vulnerabilities]. It uses its [artificial intelligence] planning ability and knowledge of the world to come up with network attack plans. You tell it about your network, and instead of running canned exploits against it and doing the old-fashioned intrusion detection, you do hypothetical reasoning. You experiment on the model instead of the actual network.

## What is OpenCyc?

It's a daring gamble to gradually make everything in the Cyc knowledge base public. An initial release last week made available about 5,000 concepts and 50,000 axioms or assertions about them. We will gradually, over the next two years, migrate everything to the public mode. But OpenCyc will always lag by 24 to 30 months.

## Are you continuing to add to Cyc? Yes.

Cyc finally knows enough that it can actually help with the knowledge-entry process. It's changed in the past year from where we were entering these things by hand and

## Knowledge Sample

The Cyc knowledge base uses predicate calculus to encode assertions such as "Animals sleep at home."

```
(forall ?x (forall ?y (forall ?PLACE
  (implies (and
    (isa ?y Animal)
    (isa ?y SleepingEvent)
    (performer ?y ?x)
    (location ?y ?PLACE))
    (home ?x ?PLACE))))))
```

This says that if *x* is an animal and is the performer of a sleeping event, then the place where that event takes place is the home of *x*.

writing them in logic to a kind of tutoring mode. For example, you say, "I want to tell you about a new kind of bacteria," and it might say, "What kinds of things does it kill? It is similar to anything I know about already?" Up until now, the only people adding knowledge were a small priesthood of logicians. Now, suddenly, millions of people can add their knowledge to Cyc. Because of the acceleration, we'll be at 10 million assertions a year from now.

## Won't input from the public bring in a lot of garbage?

I'll have an OpenCyc committee to help vet knowledge that is suggested. Also, we've developed the notion of local consistency, which is analogous to our everyday notion of the earth as being locally flat and globally spherical. In the same way, we have divided the knowledge base into regions that are locally consistent, and all the inconsistent information is so far away that you can ignore it. If someone puts in "Dining room tables are made of Jello," that will contradict so many things in the "normal" part of the knowledge base that it automatically will get pushed out into the boozies.

## Is Cyc like the human genome project, where eventually you will be done, or will it grow forever?

I refer to it as the human "memome" project. A typical person knows about 100 million things about the world. I see us crossing that point in five years. It's difficult to predict the course thereafter. ■

**Quick Link**

To learn how an early user of the Cyc knowledge base is applying it in a national security application, visit our Web site.

[www.computerworld.com/CI990807](http://www.computerworld.com/CI990807)



# Windows Gets A 64-Bit Boost

**OUTLOOK: Microsoft's 64-bit version of .Net Server will give some applications a much-needed performance boost. Here's how the technology will eventually fit into enterprise computing. By Drew Robb**

**M**icrosoft's new 64-bit Windows XP Professional desktop operating system is a long way from being the server operating system model. Now, the system is setting its sights on high performance workstations and servers.

But I keep getting the feeling last time, when it came to shipping the 64-bit Windows XP Professional desktop architecture, there was a Microsoft attitude of "let's do it once, do it right." And 64-bit servers are a different story. Windows 2000 Advanced Server Edition 64-bit is an untested 64-bit version of Windows XP for the desktop. Server vendors have already begun shipping Windows servers for the migration of applications to 64-bit servers.

It's not for nothing that Microsoft's Windows applications are not running on 64-bit servers. The company is supporting a migration of applications to 64-bit servers.

Microsoft's new 64-bit Windows XP Professional desktop operating system is a long way from being the server operating system model. Now, the system is setting its sights on high performance workstations and servers.

## The Migration Curve

Microsoft's new 64-bit Windows XP Professional desktop operating system is a long way from being the server operating system model. Now, the system is setting its sights on high performance workstations and servers.

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## ■ AT A GLANCE Wintel 64-Bit Computing

**WHAT IS IT?**  
New Windows XP and .Net Server versions running on Intel IA-64-based systems that support high-performance, 64-bit applications.

**WHAT IT'S GOOD FOR**  
CPU-intensive 32-bit Windows applications could benefit from wider processing bandwidth, faster speeds and support for up to 64GB of memory.

**WHO WILL BENEFIT?**  
Enterprises using compute-intensive applications, including engineering, data mining and multimedia applications.

**WHAT'S THE CATCH?**  
Applications must be recompiled and tested for optimum performance. 64-bit versions of commercial applications are not yet available.

**WHO SHOULD PASS?**  
Organizations running Windows applications that aren't constrained by processing power and available memory.

Microsoft's new 64-bit Windows XP Professional desktop operating system is a long way from being the server operating system model. Now, the system is setting its sights on high performance workstations and servers.

## Real-World Implications

Early 1400 MHz chipsets from Intel and AMD will support 64-bit applications. Developers are already adapting various .Net server-side languages to the IA-64 architecture. Windows XP Professional 64-bit is expected to be released in the second half of 2002.

Some of the tasks we use for quantitative modeling have a million-dollar outcome. It's not just the speed of the calculations, but the accuracy of the results.

While it makes sense to migrate some compute-intensive Windows applications to the new platform, Windows servers are unlikely to challenge the high-end Unix systems that run the data center applications—stable and mature.

Even then, programmers may find it easier and more cost-effective to recompile old 32-bit applications to run on RISC systems than to migrate them to 64-bit servers.

But most enterprise software vendors are already working on 64-bit versions of their software.

Although Unix vendors have more experience in the server market, IBM and independent hardware vendors support for Windows should mean that it goes to use Unix's "it's a Unix thing" as Mary Hales, an analyst at Stamford, Conn.-based Forrester Inc. But, she says, "64-bit applications are not going to dominate the server market."

And if you're a client writer in Finance, let's contact him at 603.888.4444.

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## ■ THE MARKET

### Activity on The Horizon

The Wintel 64-bit product landscape is barren today, but that's likely to change during the next 12 months.

#### SERVICES

Vendors such as Dell Computer Corp., IBM and Compaq Computer Corp. already offer .Net-based systems for sale with Windows 2000 Advanced Server Limited Edition.

#### DEVELOPMENT TOOLS

Both Intel and Microsoft offer 64-bit compilers and development tools. Third-party vendors such as Rational Software Corp. also offer tools to help with the transition.

#### ENTERPRISE APPLICATIONS

Vendors that have announced 64-bit application support include Computer Associates International Inc., BMC Software Inc., SAP AG, J.D. Edwards & Co., IBM, SAS Institute Inc. and Vantage Software Corp.

#### PHASE IN PERIOD

The transition to 64-bit computing will take time. Intel will continue to develop 32-bit processors for several years as its 64-bit processors gradually gain acceptance. And 32-bit systems are likely to continue to exist long after 64-bit computing gains momentum because legacy 32-bit Windows applications will run more slowly on 64-bit systems.

Eventually, analysts say, 32-bit Windows will go the way of DOS. Boston-based Aberdeen Group Inc.'s Tom Muris projects it will take 18 to 24 months before 64-bit Windows gains mainstream support. "The marketplace has to feel comfortable that it's a hardened platform that is fully tested and is ready for their mission-critical applications," he says.

But Tim Bolder, director of marketing at Compaq's Enterprise Server Group, predicts the transition to 64-bit computing will take three to five years.

## ■ 16-B

### Developers Ponder the 64-Bit Question

Daniel Mezick

What are the application migration issues?

Are programmers interested in 64-bit Windows? 2

What advice would you give programmers considering a migration? 1

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# Windows Gets A 64-Bit Boost

**OUTLOOK: Microsoft's 64-bit version of .Net Server will give some applications a much-needed performance boost. Here's how the technology will eventually fit into enterprise computing. By Drew Robb**

**M**ICROSOFT CORP. successfully made the leap from desktop dominance to grabbing a hefty share of the server operating system market. Now the vendor is setting its sights on high-performance workstations and servers.

Intel Corp. got the ball rolling last June, when it started shipping the 64-bit Itanium processor, based on its IA-64 architecture. Then in August, Microsoft introduced an evaluation version of its first 64-bit server operating system, Windows 2000 Advanced Server Limited Edition, and announced a 64-bit version of Windows XP for the desktop.

Server vendors have already begun shipping Wintel systems. But the migration of applications is likely to be a slow process, say users and analysts.

The benefit for compute-intensive Windows applications is significant. Itanium systems offer floating-point performance improvements that speed up applications such as 3-D modeling and bio-

man genome analysis. Since the Itanium can access up to 16TB of RAM, entire databases can move from disk to memory, allowing access speeds that are 100 times faster than disk-bound databases.

## The Migration Curve

Programmers can use Microsoft's Visual Studio .Net development software to create 64-bit applications, says Velle Koidke, a lead product manager at Microsoft. "IA-64 uses the same Windows programming model" and user interface, he says, "so 32-bit developers and ISVs [independent software vendors] don't have to learn a new one."

This summer, Microsoft plans to introduce 64-bit versions of Windows .Net Datacenter Server and Windows .Net Enterprise Server. At the same time Intel will release its new 2-GHz Itanium processor, code-named McKinley, which will have a higher clock speed and enhanced compiler capabilities. Two more 64-bit Intel processors, code-named Madi-

## Wintel 64-Bit Computing

New Windows 64-bit applications can take advantage of the 64-bit Itanium processor's ability to access up to 16TB of RAM.

son and Deerfield, are scheduled for mid-2003 release.

Missing from the equation are the 64-bit applications, and software vendors aren't likely to announce ship dates until the release date of Microsoft's first 64-bit operating system is final.

## Real-World Implications

Early IA-64 releases have been geared toward developers and early adopters. Savvas Papaiaconou, manager of the MIS Group at Wells Fargo & Co. in San Francisco, is running a pilot to optimize a 64-bit version of an SAS database used for market and customer behavior analysis.

"Some of the tables we use for quantitative modeling have 600 million observations," he says. "As we optimize the SAS code, we are seeing increasingly better performance."

While it makes sense to migrate some compute-intensive Windows applications to the new platform, Wintel systems are unlikely to challenge the high-end Unix systems that run 64-bit data center applications until stability and maturity are proven. Even then, programmers may find it easier and more cost-effective to recompile 64-bit Unix applications to run on Itanium systems that run Linux instead of .Net Server.

But most enterprise software vendors are already working on 64-bit versions of their software.

"Although Unix vendors have more experience here, the sheer weight of ISV and independent hardware vendor support for Windows should mean that it gains acceptance quickly," says Mary Hubley, an analyst at Stamford, Conn.-based Garner Inc. But, she adds, "32-bit applications are likely to predominate for some time." ■

Robb is a freelance writer in Tujunga, Calif. Contact him at [drewrobbs@aattol.com](mailto:drewrobbs@aattol.com).

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## IN THE MARKET

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The Wintel 64-bit product landscape is barren today, but that's likely to change during the next 12 months.

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Both Intel and Microsoft offer 64-bit compilers and development tools. Third-party vendors such as Rational Software Corp. also offer tools to help with the transition.

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#### PHASE-IN PERIOD

The transition to 64-bit computing will take time. Intel will continue to develop 32-bit processors for several years as its 64-bit processors gradually gain acceptance. And 32-bit systems are likely to continue to exist long after 64-bit computing gains momentum because legacy 32-bit Windows applications will run more slowly on 64-bit systems.

Eventually, analysts say, 32-bit Windows will go the way of DOS. Boston-based Aberdeen Group Inc.'s Tom Marter predicts it will be nine to 16 months before 64-bit Windows gains mainstream support. "The marketplace has to feel comfortable that it is a hardened platform that is fully tested and is ready for their mission-critical applications," he says.

Tim Golden, director of marketing at Compaq's Enterprise Server Group, predicts the transition to 64-bit computing will take three to five years.

## ■ Q&A

### Developers Ponder the 64-Bit Question

**Daniel Muzick** is president of New Technology Solutions Inc., a provider of programmer training services in North Haven, Conn.

**Are programmers interested in 64-bit Windows? We are not seeing any grassroots developer interest in 64-bit Windows.**

**What are the application migration issues? The main thing blocking programmers is the [application programming interface] changes.**

**What advice would you give programmers considering a migration? Before long, Microsoft will be**

beating the drum about how you must write to .Net if you want a migration path to 64-bit processors.

My advice is to make that migration carefully. Moving to .Net requires plenty of developer training, and migrations are essentially a rewrite. So application owners need to think strategically.

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YOU NEED A DIFFERENT KIND OF SOFTWARE.

# Peer-to-Peer Network

## DEFINITION

A peer-to-peer network is one in which two or more PCs share files and access to devices such as printers without requiring a separate server computer or server software.

BY JAMES COPE

**I**N ITS SIMPLEST FORM, a peer-to-peer (P2P) network is created when two or more PCs are connected and share resources without going through a separate server computer. A P2P network can be an ad hoc connection—a couple of computers connected via a Universal Serial Bus to transfer files. A P2P network also can be a permanent infrastructure that links a half-dozen computers in a small office over copper wires. Or a P2P network can be a network on a much grander scale in which special protocols and applications set up direct relationships among users over the Internet.

The initial use of P2P networks to business followed the deployment in the early 1980s of free-standing PCs, in contrast to the minmainframes of the day, such as the VS system from Wang Laboratories Inc., which served up word processing and other applications to dumb terminals from a central computer and stored files on a central hard drive; the three-no PCs had self-contained hard drives and built-in CPUs. The smart boxes also had onboard applications, which meant they could be deployed to desktops and be useful without an umbilical cord linking them to a mainframe.

Many workers felt liberated by having dedicated PCs on their desktops. But soon they

## Navigating a P2P Network

This diagram shows how a P2P network operates. The solid lines indicate physical, hard-wired network cables. The dotted lines indicate that each PC can communicate and share files with every other PC on such a network. A printer attached to one PC can be used by other PCs on the network—if that printer's PC allows such use.



needed a way to share files and printers. The obvious solution was to save files to a floppy disk and send the disk to the intended recipient or send it by interoffice mail.

### Sneaker Nets

That practice resulted in the term "sneaker net." The most frequent endpoint of a typical sneaker net was the worker who had a printer connected to his machine.

While sneaker nets seemed an odd mix of the newest technology and the oldest form of transportation, the model is really the basis for today's small P2P workgroups.

Whereas earlier centralized computing models and today's client/server systems are generally considered controlled environments in which individuals use their PCs in ways determined by a higher authority, a classic P2P work-

group network is all about openly sharing files and devices.

In general, office and home P2P networks operate over Ethernet (10M bit/sec.) or Fast Ethernet (100M bit/sec.) and employ a hub-and-spoke topology. Category 5 (twisted-pair) copper wire runs among the PCs and an Ethernet hub or switch, enabling users of those networked PCs access to one another's hard drives, printers or perhaps a shared Internet connection.

### Both Client and Server

In effect, every connected PC is at once a server and a client. There's no special network operating system residing on a robust machine that supports special server-side applications like directory services (specialized databases that control who has access to what).

In a P2P environment, access rights are governed by setting sharing permissions on individual machines.

For example, if User A's PC is connected to a printer that User B wants to access, User A must set his machine to allow (share) access to the printer. Similarly, if User B wants to have access to a folder or file, or even a complete hard drive, on User A's PC, User A must enable file sharing on his PC. Access to folders and printers on an office P2P network can be further controlled by assigning passwords to those resources. ■

Cope is an Indiana-based freelance writer. He can be contacted at [jamescope@bnet.net](mailto:jamescope@bnet.net).

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## P2P Over The Internet

Although the Internet is very much a client/server network, there are file-sharing technologies that enable users to create a P2P environment over the public Internet.

The one that got the most attention was that of San Mateo, Calif.-based Napster Inc., which got the thumbs from the federal government but lost for serving users to search one another's hard drives for copyrighted files. But Napster wasn't truly P2P. Users of the service had to log on to a server to search for a file; the server then pointed to the PC of another user somewhere on the Internet containing the desired file. Once the file was found, though, the download took place peer-to-peer, from one PC to another.

Another P2P file-sharing system that uses the Internet is Gnutella, a protocol originally developed by San Francisco-based Nullsoft Inc. but subsequently patented into the public domain when Nullsoft was purchased by Dallas, Va.-based America Online Inc. in 1999.

Gnutella-compatible end-user applications create what's called a Gnutella network when installed on an end user's PC. When logged on to the Internet, servers announce themselves to other servers and also propagate search requests for files based on user hard drives. The query results are presented to the user via the nearest application, the user selects the file he wants and then downloads it over the Internet directly from the PC housing the file.

—James Cope



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# Suspected Code Theft Creates a Forensic Furor

When Mathias' company thinks someone is stealing intellectual property, it's up to him to find out who

BY MATTHIAS THURMAN

I RECENTLY RECEIVED A CALL from one of my company's intellectual-property lawyers, who suspected that someone had stolen the source code to one of our products. A license for the product costs more than \$100,000, so the possibility that it might have been taken was cause for great alarm.

Here's what happened: Our company entered into a joint development agreement with another firm and provided a Solaris workstation containing the source code for the software in question for purposes of interoperability testing with our partner's products.

During the course of the integration work, one of the other firm's employees was laid off. Prior to his departure, the employee, now disgruntled, claimed that an unnamed colleague had copied our company's source code for his own use. The colleague allegedly had bragged about using parts of our code to create a new product. Upon hearing this, our attorney immediately ordered the server brought down and the system's internal hard drive returned. My task was to determine, if possible, whether the source code had been copied — and by whom.

Faced with a forensic analysis of the hard drive, I had three options. I could do the work in-house, outsource all of the work or outsource part of it. To avoid bias or conflict of interest, I decided to outsource the entire project.

## Finding an Expert

My first job was to find a reputable, capable and efficient forensic analyst to do the work quickly. I called a few people I used to work with who had expertise in this area. The first person said he could create a mirror image of

the drive, but he wasn't skilled enough with the Solaris operating system to provide an analysis that would prove — or disprove — the transfer of our company's source code. The other fellow had the Solaris skills we needed but had his hands full indefinitely with work related to the Enron Corp. case. However, he gave me a reference, and I also obtained references from other information security professionals and found the names of reputable firms through an Internet search.

In reviewing the vendors, I considered their level of expertise (Did they have Solaris forensic skills?), business viability (Would they be around when this case goes to trial?) and reputation (If they had to testify, would they be considered credible witnesses?).

The vendors charged hourly rates ranging from \$150 to \$400. All charged for "nonattended" work — the time required for their system to create a drive image — but some charged that time at a lower rate. Time estimates for the project ranged from two days to a week. In the end, I chose the winning vendor based on its strong references.

It took several days to negotiate a statement of work with estimates of the project's cost, time and scope. Part of those discussions included clearly delineating what the forensic analyst should look for. Ideally, I wanted them to answer the "who, what, where, when, why and how" questions related to the incident. Of those, "why" usually is the most difficult because that's a question best answered by the criminal. But the other answers might be gleaned by carefully analyzing files, logs and other residual data — even data that might have been erased but not yet overwritten on the hard drive.

In our case, all we really needed to know was whether our source code had been copied or transferred, who did it, when they did it, how it was transferred or copied and where the files were transferred. After reaching an agreement with the vendor, I signed out the evidence — a hard drive stored in a safe in our facilities manager's office — and shipped it to the firm's forensic lab.

## The Assessment

Forensic specialists use several methodologies in a media analysis, but they start by creating a mirror image of the original disk drive. Once the vendor creates the drive image, it can return the original drive to the owner for safekeeping. An analyst then extracts the mirror image to a clean hard drive before beginning the analysis.

Our analyst sent our original hard drive back, along with a second drive containing a mirror image. We can use this copy if we want a second opinion or want to perform an analysis ourselves. The image includes an MD5 checksum of the image so that it can be verified to be an exact copy of the original drive if there's a question about the integrity of the image.

After about a week, the vendor returned the results — with some interesting conclusions. Unfortunately, it found no clear evidence that a specific individual transferred the files to another company using file transfer protocols. But the vendor did find information in one of the shell history files that seemed to imply that a transfer took place.

The shell, or command processor, programs used by Solaris and other Unix operating systems typically have a history function that lets administrators execute previously entered commands without retyping them. The shell history file is a text file located in each user's home directory, where it provides a clue to what commands a given user has executed. The history file for the root administrator account on our drive showed that someone had created a tape archive for one of the files in question and had copied it to an external medium. However, there wasn't any evidence to show what type

## THISWEEK'S GLOSSARY

**MD5 checksum:** This algorithm, originally designed to create digital signatures, can also be used to verify that a drive image is an exact copy. The process creates a unique encrypted value, called a message digest, based on the number of set bits in a file. Using a public key, a forensic analyst can compare the decrypted numerical value for the drive image to one calculated on the original to verify that the copy hasn't been altered. For more information, visit <http://theory.lcs.mit.edu/~stevens/About-MD5.txt>.

## LINKS:

**Forensic Analysis Firm**  
EvidentData Inc.  
Pasadena, California  
[www.evidentdata.com/](http://www.evidentdata.com/)

**Foundation Inc.**  
Mountain View, Calif.  
[www.foundationinc.com/](http://www.foundationinc.com/)

**New Technologies America Inc.**  
Gresham, Ore.  
<http://www.newtech-usa.com/>

**De-It-Normal Tools**  
[www.de-it-normal.com/](http://www.de-it-normal.com/)  
Tulsa, Okla. In a set of forensic tools for Unix forensic media analysis.

[www.forensic-tool.com/theorie.html](http://www.forensic-tool.com/theorie.html)  
Intel: Screenshot from New Technologies performs "evidence-grab" mirrored backups of hard drives.

[www.goldmineforensics.com/](http://www.goldmineforensics.com/)  
Intel/Forensics: Intel: In Pasadena, Calif. is one of the better-known commercial disk-analysis tools.

of media was connected to the Solaris server when the archive took place. And since many people had access to the root account, it was difficult to pin the activity on a single individual.

The next step is to interview potential suspects and try to get them to confess. Fortunately, I can leave that up to the lawyers. Could I have done more? I welcome readers with ideas and similar experiences to join in the Security Manager's Journal forum online. ■

**Quick Link**

Discuss the week's column and catch up on the latest security developments online at [www.computerworld.com/forum000](http://www.computerworld.com/forum000)



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Software Engineers/Software Consultants/Programmer Analysts/System Administrators (all multiple positions) sought by computer use consultancy firm in North Brunswick, N.J. Must have Bachel in Comp Sci., Engg or equiv and one yr relevant exp. Respond to: HR Dept, E20 Technology, Inc., 201 North Central Ave., North Brunswick, NJ 08902

**Systems Analyst** wanted by NJ based Co for job-loc throughout the US. Must have Bachelor's degree in Comp. Sc. or Engg., 3 yrs. of relevant exp. & proficiency with VB, ASP, XML, SQL. Server. Respond to: Netcom Systems, Inc., 200 Metropolitan Dr., 3rd fl., Edison, NJ 08817 (Fax 908.818.0100). No phone calls.

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Conscience Programman started to develop & enhance process science software using C++ & MFC, specifically applies to bio-medic data interpretation & modeling. Multiple positions. Master Degree in Science/Engineering & 1 yr programming experience esp. Send resume to: Systems Micro-Technologies, Inc. 6684 Katy Freeway, Suite 400, Houston, TX 77024.

2. **Whittaker of Jewelry** seeks: **Prod. Design Analyst** to develop design and oversee the operation of the system, research and analyze Web sites, confer with management to plan content, security. Use research analysis to build prototypes, test system (select software codes and equipment systems/products). **Whittaker's Degree** in Electronics Engineering or related field on a graduate level. **Min. exp.** 1 year working in job or sub-field. **Exp.** must include use of Oracle Java & Microsoft NT/Novell required. **Resumes** to: **GM Recr. Jewelers USA, Inc.**, 390 E. Roosevelt Rd. Ste. 200 Lombard, IL 60148-1104. Fax: 630/636-6306.

**Engineers**  
Chief Architect to enhance product development, optimization and marketing of 300- and 400-frame enterprise software. Requires 2 years of recent-level exp. in full-cycle development using C++, C, C++, C, Java, Transact-SQL, and other languages. Requires 2 years of recent-level exp. in distributed enterprise software.  
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**Senior Software Engineer** and by home assisted design & manufacturing company in Lafayette, CO to work in Lafayette & other developed job sites in the U.S. At a senior level, engage in life-cycle software development of applications which manage integral processes. The software applications are developed in client-server platform & incorporate relational database management systems, spreadsheets. Once they run on UNIX & Windows NT operating systems. Analyze requirements & create designs. Code, test, debug, install. The success depends on. Complete evaluation of the applications & a

**Staffing:** Prepare internal documentation. Use programming languages C, Prolog, C++, PASCAL, a variety of shells including C-shell, and shells for HP applications, and ECL. Live in the design & development process. Required Master's equivalent specifically a master's degree or foreign equivalent computer science or related field plus three years of progressive experience in developing software applications in a client-server environment, or a bachelor's degree in foreign equivalent in computer science or related field plus five years of progressive experience in developing software applications in a client-server environment.

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Oracle Developer for NJ based Organization. Must have a Bachelor's degree in Comp. Sc., Engg., 3 yrs of exp in job duties in Comp. SW dev and/or consulting and proficiency in Oracle and its tools. Please send to Mr Jose Montanez, MBS Dept., Operating Engineers Local 825 Apprentices Training and Retraining Fund, 65 Springfield Ave., Springfield, NJ 07081 (Ph: 609-338-6666) No phone calls.

Database Developer sought by NJ based Securities Dealer. Must possess Master's Degree or equivalent in Information Systems Technology or closely related field and 2 years exp. in software/systems development and design. Respond to: Human Resources Department, Knight Trading Group, Inc., 525 Washington Blvd., Jersey City, NJ 07310

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## Fair Is Fair

**H**ERE'S WHY MICROSOFT IS A LAUGHINGSTOCK when it comes to security: Last week, security researcher Georgi Guninski announced that he had found two more holes in Microsoft's Office XP. Guninski actually found the holes in mid-March and notified Microsoft on March 17. After two weeks passed without Microsoft issuing a patch or work-around, Guninski went public.

Microsoft's response? A belated work-around for one of the security holes and a complaint that Guninski had gone public "before we've had a fair chance to investigate."

Fair? Fair? Wait, it gets better: Microsoft's official statement went on to say that Guninski's report "may put our customers at risk.... Responsible security researchers work with the vendor of a suspected vulnerability issue to ensure that countermeasures are developed before the issue is made public and customers are needlessly put at risk."

That's pathetic. It's laughable. Those security holes are in Office XP because that's how Microsoft shipped the product. The company has been shipping products for years that are badly designed and poorly tested from a security standpoint. And Microsoft refuses to stop shipping products it knows are faulty.

Microsoft is also a notorious foot-dragger when it comes to admitting security vulnerabilities and issuing patches and work-arounds. And when the company does issue a security patch, far too often the patch ends up breaking something else — or worse, it opens a new security hole.

That's what's neither fair nor responsible. That's what puts Microsoft's customers needlessly at risk. Nobody else created this situation. Microsoft made this mess. And all the finger-pointing is just cheating Microsoft's customers.

Let's cut to the chase here: So far, Microsoft's big security initiative — called "Trustworthy Computing" — has been a joke. It's produced nothing but hot air and hand-waving. And that's all we'll get unless somebody in Redmond throws some real money and real clout at making Microsoft products more secure.

How? Microsoft could start by creating SWAT teams that treat a security hole as a crisis that poses an immediate threat to customers,

not just an annoying public relations embarrassment. Teams that can produce work-arounds to a security hole in hours or days, not weeks or months. Teams that get the resources they need to define fixes properly and test patches thoroughly — and quickly.

Then Microsoft could begin finding security holes on its own, instead of waiting for those horribly "unfair" outside security researchers to do it. That means creating a new class of software testers at Microsoft — testers whose goal is to break Microsoft products in any way possible, to find all the design flaws and coding errors that make the software vulnerable, whether they were in the specification or not.

Those code-busters will be pariahs among programmers and product managers. They'll have to think — and act — like Microsoft's worst enemies, attacking products from every possible angle and with every possible tool. And they'll have to keep attacking, even after products ship. Especially after products ship.

But their efforts to uncover holes and find problems will be useless unless those problems are fixed. Which means Microsoft would have to give them a boss who has enough clout to stand up to anyone in the company — any product manager, any executive, any

Chief Software Architect — and tell him a product has holes and must be fixed now, and damn the niceties and the shipping schedule.

Would SWAT teams and code-busters and a Chief Fix-It-Dammit! Officer solve all of Microsoft's security problems? Probably not. But with a real investment in security, Microsoft could do a lot less whining about "unfairness."

And a lot fewer people would think Microsoft's commitment to security is a joke. ■



Microsoft, Computer world's security news outlet, has dropped it for more than 20 years. Contact him at frank.hayes@computerworld.com.

## SHARK TANK

"THE SEARCH function on one of my Lotus Notes databases isn't working," user messages help desk pilot fish. We have many Lotus databases, fish replies — which one isn't working? User lives back, "When you open Lotus Notes, it will be the database on the left."

BANKING application keeps losing one field in a report. Pilot fish spends a week trying to locate the problem and finally finds it: "There's a bad 2 bit on the backplane of the processor," he tells the bank's president. Furious president calls computer vendor's CEO to learn that it took a week to fix this problem due to "a lousy 25-cent part."

MAINFRAME channel controller's indicator lights keep blinking red — for error. At 5 a.m., after 10 hours of fruitless troubleshooting, computer engineer finally struts into the command center and tells IT pilot fish he's fixed all the red-light errors. How'd it do it? Fish asks. Says

engineer, "I just changed them all to white lights."

WHY IS the wrong day's backup tape in the server? Boss asks. IT pilot fish points out that the backup system hasn't worked in two years, so why waste time changing tapes every day for a broken backup system? Wrong, says boss: "Just because it doesn't work, doesn't mean we don't put the tapes in there."

NEW IT security rules at this school are tight, pilot fish reports. Access to attendance application is via VPN and requires a synchronous key generator, three user names and three passwords. But one teacher finds a way around the password hassles. "Now I just turn my monitor off when I go home."

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## The 5th Wave



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